JOURNAL
OF
FARM ECONOMICS

Vol. XXV November, 1943 No. 4

# CHRONIC SURPLUSES OF AGRICULTURAL COMMODITIES IN THE POST-WAR PERIOD*

BENNETT S. WHITE, JR.
*Bureau of Agricultural Economics*
EDITH T. DENHARDT
*Department of State*

DURING the interwar period, particularly in the 1930's, a number of the staple agricultural commodities of world commerce brought low prices and incomes to many of their producers. The capacity available for producing these products resulted in a greater volume of output than could be sold at profitable prices. At the same time millions of people throughout the world were ill-fed and inadequately clothed. As the fabric of world production and trade is being warped and twisted by the greatest and most destructive war of all time, plans are going forward in the United Nations for concerted action in the post-war period to expand and reorient production so as to provide both higher levels of consumption of food and fiber for the masses and satisfactory returns to producers. One of the first steps necessary to such planning is a consideration of the probable post-war situation for the various individual commodities with which reform measures will have to deal. The present paper is an attempt to outline the probable position, as to nature and origin, of several important internationally traded agricultural commodities for which supplies are expected to be large relative to demand.

## *The Nature of Chronic Surpluses*

For the purpose of this survey a commodity is considered to be in a chronic surplus position when, as a result of some fundamental and long-term maladjustment between supply and demand, stocks and carry-overs are accumulating (if the commodity is non-perishable), prices and returns to producers are too low to permit profitable operation for a large part of the industry, and producers

* Acknowledgment is made of the contribution of much information and many helpful suggestions by the Commodity Specialists of the Bureau of Agricultural Economics, and Mr. A. Cairns, Secretary of the International Wheat Council.

are seeking alternative means of securing a livelihood insofar as such alternatives are available.[1]

Maladjustments between supply and demand that arise as the result of some fundamental change in the structure of production or the character of consumption can be corrected only if a fundamental adaptation to the new conditions takes place. Maladjustments become chronic when such an adaptation does not occur. A situation requiring a basic adjustment on the part of producers may arise in a number of ways, from changes in the technique of production, from the extension of production into new and lower cost areas, from technical developments with respect to other commodities resulting in production of popular substitutes, and from other changes in consumers' tastes. These changes are a normal part of economic development, and consequently, for the most part, they are desirable in themselves. However, economic rigidities, associated with the fixed nature of many capital goods, the absence or scarcity of attractive alternative enterprises, and the immobility of large groups of workers may result in long periods of distress for producers and heavy economic loss to society, unless positive measures are taken to shift production out of the commodities affected. Maladjustments may also arise from protective and price-raising policies leading to uneconomic extension of production, to the maintenance of uneconomic productive capacity, and in some cases to decreases in consumption. In practice, such unsound protective and price-raising policies not only have created new disequilibria between demand and supply but have been used to reinforce, aggravate, and preserve maladjustments arising from other causes.

### *Commodities Which Existed in Chronic Surplus at the Beginning of the Current War*

Wheat, sugar, cotton, and coffee are agricultural commodities for which the problem of chronic surpluses was acute in the period just preceding the outbreak of the present war. Many factors had a part

[1] Therefore, excluded from consideration are surpluses arising as a result of fluctuations in yield or cyclical fluctuations in demand, which, although they complicate the adjustment of supply and demand for all commodities, do not call for long-term measures designed to shift production out of the commodities affected. Thus the great depression resulted in a tremendously increased problem for cotton, sugar, coffee, and wheat but in all cases symptoms of maladjustment were appearing before the depression. Similarly, fluctuations in yield have been responsible for sudden and serious changes in carry-overs and at times have radically altered the "surplus" situation. For example, the bumper coffee crops of 1927 and 1929 would have put the Brazilian coffee control into difficulties even if depression had not followed in 1930. On the other hand, the short wheat crops, 1933–37, to a large extent due to the drought in the United States and Canada, temporarily eliminated wheat surpluses.

TABLE 1. WHEAT ACREAGE AND PRODUCTION IN FOUR OVERSEAS EXPORTING COUNTRIES, THE DANUBIAN COUNTRIES, AND IMPORTING EUROPE, 1909–13, 1922–39, AND 1942

| | Year of harvest | | | | | |
|---|---|---|---|---|---|---|
| | 1909–13 average | 1922–26 average | 1927–31 average | 1932–36 average | 1937–39 average | 1942 |
| | *Million acres* | *Million acres* | *Million acres* | *Million acres* | *Million acres* | *Million acres* |
| Argentina | 16.05 | 17.97 | 20.50 | 17.99 | 19.95 | 16.43 |
| Australia | 7.60 | 10.40 | 15.00 | 13.50 | 13.79 | 10.90 |
| Canada | 9.95 | 22.06 | 24.85 | 25.47 | 26.09 | 21.60 |
| United States | 52.02 | 61.98 | 67.60 | 68.59 | 74.20 | 52.53 |
| Total (4) | 85.62 | 112.41 | 127.95 | 125.55 | 134.03 | 101.46 |
| Danubian (4) | 19.62 | 17.51 | 19.53 | 19.97 | 22.32 | 19.70 |
| Importing Europe | 49.52 | 46.80 | 48.84 | 52.90 | 54.67 | 51.85 |
| | *Million bushels* | *Million bushels* | *Million bushels* | *Million bushels* | *Million bushels* | *Million bushels* |
| Argentina | 147.1 | 211.2 | 249.2 | 231.7 | 239.1 | 235.5 |
| Australia | 90.5 | 134.9 | 161.8 | 164.0 | 184.3 | 152.0 |
| Canada | 167.5 | 389.7 | 418.6 | 302.4 | 353.6 | 592.7 |
| United States | 681.7 | 789.7 | 888.3 | 618.5 | 845.0 | 981.3 |
| Total (4) | 1,086.8 | 1,525.5 | 1,717.9 | 1,316.6 | 1,622.0 | 1,961.5 |
| Danubian (4) | 330.0 | 255.8 | 333.1 | 304.9 | 426.4 | 285.0 |
| Importing Europe | 929.7 | 892.5 | 977.0 | 1,182.3 | 1,269.7 | 1,092.0 |

Bureau of Agricultural Economics.

to play in the creation of the initial disequilibrium which later became chronic. One of these was the 1914–18 war which stimulated the expansion of production in new areas and gave an impetus to economic nationalism, thus creating serious problems of adjustment in later years. As a result of that war, production of wheat and sugar was expanded to a tremendous extent outside of Europe and after the war, as European production came back, world supplies began to exceed demand. Some expansion of overseas production would have taken place even if the war had not intervened but it would have occurred neither so rapidly nor so extensively, nor would the resultant problems have been so acute.

Although expansion of production during the 1914–18 war was the beginning of the interwar wheat and sugar problems, the consequences of this expansion would have been less serious than they were had it not been for the encouragement and protection given to wheat and sugar production in high-cost areas after the war. In addition, the development of higher yielding varieties of sugar cane and beets and the improvement of production methods increased the yield and reduced the cost of production of both commodities.

TABLE 2. SUGAR: WORLD STOCKS, PRODUCTION, AND CONSUMPTION, RAW VALUE, AND PRICE OF SUGAR, RAW 96° CENT. AT HABANA, CUBA, AVERAGE OF YEARS BEGINNING SEPTEMBER 1

| Year beginning Sept. 1 | Estimated initial world stocks, Sept. 1[1] | Estimated world production[1] | Estimated world consumption[1] | Stocks Aug. 31 as a percentage of consumption | Average price per pound sugar raw 96° cent. at Habana, Cuba[2] |
|---|---|---|---|---|---|
| | *1,000 long tons* | *1,000 long tons* | *1,000 long tons* | *Percent* | *Cents* |
| 1922 | 5,081 | 18,742 | 19,361 | 23.0 | 4.47 |
| 1923 | 4,462 | 20,662 | 19,855 | 26.5 | 4.31 |
| 1924 | 5,269 | 24,566 | 22,680 | 31.5 | 2.79 |
| 1925 | 7,155 | 24,958 | 24,313 | 32.1 | 2.03 |
| 1926 | 7,800 | 24,567 | 24,725 | 30.9 | 2.62 |
| 1927 | 7,642 | 26,616 | 26,098 | 31.3 | 2.40 |
| 1928 | 8,160 | 28,057 | 26,967 | 34.3 | 1.76 |
| 1929 | 9,250 | 27,690 | 26,374 | 40.1 | 1.48 |
| 1930 | 10,566 | 28,921 | 27,125 | 45.6 | 1.11 |
| 1931 | 12,362 | 26,431 | 26,724 | 45.2 | .82 |
| 1932 | 12,069 | 24,692 | 26,193 | 40.3 | .87 |
| 1933 | 10,568 | 25,709 | 26,287 | 38.0 | 1.11 |
| 1934 | 9,990 | 26,191 | 27,188 | 33.1 | 1.46 |
| 1935 | 8,993 | 28,846 | 29,231 | 29.4 | 1.72 |
| 1936 | 8,608 | 30,818 | 30,549 | 29.1 | 1.78 |
| 1937 | 8,877 | 30,967 | 29,647 | 34.4 | 1.49 |
| 1938 | 10,197 | 29,478 | 29,406 | 34.9 | 1.48 |
| 1939 | 10,269 | 30,974 | 29,819 | 38.3 | 1.49 |
| 1940* | 11,424 | 30,237 | 29,295 | 42.2 | 1.41 |
| 1941* | 12,366 | (28,600) | | | 2.38[3] |

* Unrevised estimate.
[1] From Lamborn's Sugar Statistical Bulletin Apr. 3, 1941.
[2] From U. S. Department of Agriculture Yearbooks of Agriculture.
[3] Preliminary.

World War I was also partly responsible for the development of the cotton surplus in the United States. The war increased the relative importance of the cotton textile industry in India and Japan, thus affecting the foreign demand for American cotton. It also encouraged the spread of economic nationalism, which was to some extent responsible for the increased expansion of production in other countries.

But the war was by no means the most important factor. Production of cotton in other countries had been steadily increasing even before the war, and after the war it received more Government assistance than before. Furthermore, foreign production was accelerated by the relatively higher prices of American cotton during a large part of the interwar period. In the early 1920's, the ravages of the boll-weevil were chiefly responsible for the short crops and high prices of American cotton. In the 1930's, the American policy

of restricting production, withholding stocks, and raising prices again resulted in high prices for American cotton relative to those of foreign cotton. Also, the tariff policy of the United States and the depreciation of exchanges in other producing countries reduced American cotton exports. Furthermore, it is doubtful whether Brazil's cotton production, which has more than quadrupled in the last decade, would have expanded so rapidly had it not been for the necessity of shifting coffee producers into the production of some other commodity.

On the demand side, the development of rayon and synthetic fibers had some effect on the demand for cotton. These fibers were substituted for cotton on a very large scale in Germany and Italy where their use was stimulated by measures of economic nationalism. American cotton had represented a large proportion of the total consumption of cotton in these countries before their adoption of autarchic policies. Furthermore, these latter policies, as implemented through import quotas, exchange restrictions, and bilateral trading agreements, not only reduced the utilization of cotton in general but compelled the importation of increased quantities of foreign growths at the expense of American cotton.

The result of these factors was a decrease in the proportion of American cotton consumed by the cotton mills of the world without a compensating decline in American production. Acreage was reduced somewhat in the 1930's but yields increased as a result of the conquest of the boll-weevil, unusually good weather conditions, and improved methods of cultivation. The tremendous crop of 1937 was never entirely absorbed and carry-overs in the United States have been consistently high since 1931, reaching a peak of 12.9 million bales in 1939—more than the total world consumption of American cotton in 1938.

The origin of the coffee surplus problem is similar in important respects to that of cotton. The expansion of production into new areas, partly encouraged by the price policy of the principal producing country, and a concomitant shift of demand toward the coffees of the newer countries characterized the history of coffee production and consumption in the interwar period. Fluctuations in the coffee crop as a result of fluctuations in yield had created periodic surpluses of coffee long before the war. Brazil, the principal producing country, started a valorization program by which surplus stocks were withheld from the market in years of surplus production to be released in the short-crop years. Under the successive phases of this

TABLE 3. COTTON: WORLD SUPPLY AND CONSUMPTION, 1920–43

| Year beginning Aug. | Production | | | Carry-Over | | | | | Supply | | | Mill Consumption | | | U. S. season average farm price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | American | | | Foreign world | All kinds world | | | | | | | |
| | American | Foreign | Total | United States | | World | | | American | Foreign | Total | American | Foreign | Total[1] | |
| | | | | Loan | Total | | | | | | | | | | |
| | *Mil. bales*[2] | *Mil. bales*[2] | *Mil. bales*[2] | *Mil. bales*[2] | *Mil. bales*[2] | *Mil. bales*[2] | *Mil. bales*[2] | *Mil. bales*[2] | *Mil. bales*[2] | *Mil. bales*[2] | *Mil. bales*[2] | *Mil. bales*[2] | *Mil. bales*[2] | *Mil. bales*[2] | *Cents per lb.*[2] |
| 1920–24 Av. | 11.3 | 8.2 | 19.5 | 0 | 3.4 | 5.5 | 4.8 | 10.3 | 16.8 | 13.0 | 29.8 | 11.8 | 8.4 | 20.2 | 21.47 |
| 1925–29 Av. | 15.3 | 10.7 | 26.0 | 0 | 2.6 | 5.3 | 5.1 | 10.4 | 20.6 | 15.8 | 36.4 | 14.7 | 10.5 | 25.2 | 17.41 |
| 1930–34 Av. | 13.2 | 11.7 | 24.9 | 2.2[3] | 7.2 | 10.2 | 5.8 | 15.9 | 23.4 | 17.4 | 40.8 | 12.6 | 11.6 | 24.2 | 8.83[4] |
| 1935 | 10.5 | 15.6 | 26.1 | 5.1 | 7.1 | 9.0 | 6.0 | 15.1 | 19.5 | 21.7 | 41.2 | 12.5 | 15.0 | 27.5 | 11.09 |
| 1936 | 12.4 | 18.3 | 30.7 | 3.2 | 5.3 | 7.0 | 6.7 | 13.6 | 19.4 | 25.0 | 44.4 | 13.1 | 17.5 | 30.6 | 12.33 |
| 1937 | 18.4 | 18.3 | 36.7 | 1.7 | 4.4 | 6.2 | 7.5 | 13.7 | 24.6 | 25.8 | 50.4 | 10.8 | 16.8 | 27.6 | 8.41[4] |
| 1938 | 11.7 | 15.8 | 27.5 | 7.0 | 11.4 | 13.8 | 8.9 | 22.7 | 25.4 | 24.8 | 50.2 | 11.2 | 17.3 | 28.5 | 8.60[4] |
| 1939 | 11.4 | 15.9 | 27.3 | 11.0 | 13.0 | 14.1 | 7.5 | 21.6 | 25.6 | 23.4 | 49.0 | 12.9 | 15.6 | 28.5 | 9.09 |
| 1940 | 12.3 | 16.3 | 28.6 | 8.7 | 10.5 | 12.5 | 7.7 | 20.3 | 24.9 | 24.0 | 48.9 | 11.8 | 14.7 | 26.5 | 9.89[4] |
| 1941 | 10.6 | 15.5 | 26.1 | 7.0 | 12.0 | 12.8 | 9.2 | 22.0 | 23.4 | 24.7 | 48.1 | 12.2 | 13.4 | 25.6 | 17.02 |
| 1942[5] | 12.6 | 13.8 | 26.4 | 4.2 | 10.5 | 11.1 | 11.3 | 22.4 | 23.7 | 25.0 | 48.7 | 12.1 | 12.7 | 24.8 | 18.93 |
| 1943[5] | | | | | 10.6 | 11.5 | 12.2 | 22.7 | | | | | | | |

Compiled from reports of the Bureau of the Census, the New York Cotton Exchange Service, the Commodity Credit Corporation, and estimates by the Department of Agriculture.

[1] Excludes from 18,000 to 283,000 bales destroyed annually in recent years.

[2] American in running bales (counting round bales as half bales) and foreign in bales of approximately 478 pounds net weight.

[3] Probably excludes some futures, the exact amount of which is not known.

[4] Includes unredeemed loan cotton at estimated average loan value. Based on returns from special price reporters.

[5] Preliminary and partly estimated.

program, planting extended into new areas in Brazil and at the same time the profitable prices encouraged expansion in other countries. Although world consumption continued to increase, it did not increase sufficiently to absorb the entire expansion in production and surpluses accumulated, primarily in Brazil. Between 1920 and 1928, Brazilian carry-overs averaged around 4 million bags, whereas between 1928 and 1937 they averaged around 20 million bags.

TABLE 4. WORLD COFFEE PRODUCTION, EXPORTS, AND PRICES, BY FIVE-YEAR AVERAGES, 1919–39*

(Million bags of 60 kg.; cents per pound)

| Marketing period | Production | Export years | Exports | Average annual excess of production over exports | Cumulative excess | Price of Santos 4's (New York) |
|---|---|---|---|---|---|---|
| 1919–20 to 1923–24 | 20.4 | 1919–23 | 20.6 | −.2 | −1.0 | 16.7 |
| 1924–25 to 1928–29 | 28.6 | 1924–28 | 22.9 | 5.7 | 27.5 | 22.0 |
| 1929–30 to 1933–34 | 37.9 | 1929–33 | 25.3 | 12.6 | 90.5 | 12.8 |
| 1934–35 to 1938–39 | 37.9 | 1934–38 | 27.0 | 10.9 | 145.0 | 9.7 |

* V. D. Wickizer, The World Coffee Economy with special reference to Control Schemes, page 121. Food Research Institute, Stanford University, 1943.

It is clear that in respect to the four commodities discussed above, a variety of factors was responsible for an unbalanced growth of production in relation to demand in the interwar period. In each case, however, nationalistic economic policies played a predominant role in the development of chronic surpluses as they have existed since the last war. The expansion of production into new low-cost areas, improvements in yield, and changes in consumption habits need not have resulted in chronic surpluses, had governments adopted economic policies designed to adjust their economies to the new conditions. Even the distortion of the structure of production caused by the last war would not have left a permanent legacy of wheat and sugar surpluses if high-cost producers had not been assisted to continue wartime production and to regain their pre-war position. Nor would the problems of adjusting production of coffee and cotton to changing conditions have been so acute if the principal producers had pursued different price policies.

### *Changes in the Demand and Supply Situation During the Present War*

World War II, including as it does larger areas of the world in the actual theater of war and involving greater disruption of the cur-

rents of trade, is having an even more pronounced effect upon internationally traded commodities than did World War I. Widespread blockade, the shortage of shipping, the necessity for sailing in convoy, export and import controls, and the priority given to the movement of goods most directly essential to the prosecution of the war have greatly distorted the pre-war channels of trade.

The major agricultural commodities entering into international trade have been seriously affected. For example, some of the principal cotton manufacturing countries of the world, including Japan, China, and countries of Continental Europe, which collectively imported over 8 million bales before the war, are almost entirely cut off from their former sources of supply. The United Kingdom is producing and exporting very few goods not essential to the prosecution of the war and consequently is utilizing only a part of her large capacity for manufacturing cotton goods. The consequent loss in foreign markets for raw cotton has produced serious difficulties for cotton exporting countries. In the United States the record level of domestic demand has tended to offset the loss of exports, particularly for the longer staples and higher qualities. In Egypt, however, the difficulty of exporting cotton and the need for increased domestic production of food has resulted in the cutting of cotton production in 1942 to about one-third of the pre-war level. Although cotton manufacturing in Brazil has been stimulated by the war, the Brazilian Government is helping to finance the holding of raw cotton. The United States Government, in order to assist Peru, Haiti, and Nicaragua, has undertaken to purchase surplus cotton which cannot be shipped from those countries. In exporting countries, generally, an attempt is being made to reduce the production of the kinds of cotton normally exported. In China, on the other hand, conquest and the devastation of war have sharply curtailed cotton production.

The situation with respect to cotton is more or less typical of that for all of the staple agricultural commodities of world commerce. In an effort to counter the loss of exports of wheat to Continental Europe and the Orient, the major overseas exporting countries have reduced acreage, but unusually high yields have resulted in record production. It is estimated that stocks on July 1, 1943, in the four major exporting countries were about 1,800 million bushels, more than six times the 1922–28 average. Oriental rice has been cut off from outside markets and as a result production has been increased in the Western Hemisphere.

With respect to sugar, the Axis in Asia and Europe now controls countries in which consumption in the 3 pre-war years averaged nearly 9 million tons or about a million tons less than their average production. A great difference prevails, however, between East and West. In Asia, Japan has control of countries in which pre-war production was much greater than consumption, whereas in Europe the Axis-dominated countries consumed more than they produced. As a result of the Japanese occupation of the Phillipines and the Netherlands Indies and the tight shipping situation, smaller quantities of imported sugar are available to the United States and the United Kingdom.

TABLE 5. LIVERPOOL PRICES AND WHEAT STOCKS JULY 1 IN CANADA, UNITED STATES, ARGENTINA, AND AUSTRALIA, 1922–43

| Year | Price per bu. | Stocks | Year | Price per bu. | Stocks | Year | Price per bu. | Stocks |
|---|---|---|---|---|---|---|---|---|
| | *Cents* | *Million bushels* | | *Cents* | *Million bushels* | | *Cents* | *Million bushels* |
| 1923 | 127 | 290 | 1930 | 80 | 574 | 1937 | 124 | 248 |
| 1924 | 181 | 325 | 1931 | 59 | 656 | 1938 | 70 | 350 |
| 1925 | 176 | 271 | 1932 | 54 | 682 | 1939 | [1] | 700 |
| 1926 | 163 | 277 | 1933 | 68 | 787 | 1940 | | 845 |
| 1927 | 152 | 315 | 1934 | 81 | 741 | 1941 | | 1,185 |
| 1928 | 128 | 393 | 1935 | 90 | 548 | 1942 | | 1,468 |
| 1929 | 129 | 586 | 1936 | 126 | 423 | 1943 | [2] | 1,750 |

Bureau of Agricultural Economics.
[1] No prices after September, 1939.
[2] Preliminary.

During the early stages of the war large surpluses of copra, palm oil, palm kernels, flaxseed, peanuts, rape seed, and other oil-bearing materials were "backed-up" in the Philippine Islands, the East Indies, Argentina, Uruguay, and West Africa. The picture was materially changed in 1942 as a result of the Japanese aggression in the far East. The United States, other Western Hemisphere countries, the United Kingdom, and South Africa lost about 2 billion pounds of imports annually. This, together with the virtual cessation of whaling activities and mounting wartime requirements for fats, changed the situation for these countries from one of abundance to one of severe shortage, and strenuous efforts are being made to increase the production of fats and oils in the Western Hemisphere, particularly in the United States.

The situation with respect to other commodities might be outlined, but the picture in general is the same. The war has stopped

TABLE 6. WORLD PRODUCTION AND NET EXPORTS OF PRINCIPAL OILSEEDS AND OILS AND INDEX NUMBERS OF PRICES OF FATS AND OILS IN THE UNITED STATES, 1925–39,

| Year | World production | | | Net exports from primary producing countries of specified oils and oilseeds in terms of oil[2] | Total production and net exports | Wholesale price index numbers of 27 fats and oils, United States (1924–29=100) |
|---|---|---|---|---|---|---|
| | Principal oilseeds in terms of oil[1] | Olive oil | Whale oil | | | |
| | *Mil. lb.* | *Mil. lb.* | *Mil. lb.* | *Mil. lb.* | *Mil. lb.* | |
| 1925 | 10,063 | 1,450 | 388 | 2,777 | 14,678 | 106 |
| 1926 | 9,927 | 1,254 | 430 | 2,885 | 14,496 | 101 |
| 1927 | 10,442 | 2,334 | 445 | 2,859 | 16,080 | 100 |
| 1928 | 11,018 | 1,473 | 493 | 3,311 | 16,295 | 100 |
| 1929 | 10,237 | 2,853 | 704 | 3,444 | 17,238 | 97 |
| 1930 | 11,304 | 1,020 | 1,045 | 3,226 | 16,595 | 81 |
| 1931 | 10,987 | 1,885 | 1,376 | 3,105 | 17,353 | 61 |
| 1932 | 10,248 | 1,921 | 342 | 3,213 | 15,724 | 44 |
| 1933 | 10,910 | 1,712 | 969 | 3,758 | 17,349 | 48 |
| 1934 | 9,478 | 1,798 | 961 | 3,739 | 15,976 | 59 |
| 1935 | 10,650 | 2,076 | 1,005 | 4,006 | 17,737 | 78 |
| 1936 | 11,796 | 1,573 | 1,074 | 4,361 | 18,804 | 79 |
| 1937 | 13,288 | 2,427 | 1,214 | 4,449 | 21,378 | 82 |
| 1938 | 11,924 | 1,627 | 1,355 | 4,525 | 19,431 | 66 |
| 1939[3] | 12,655 | 2,308 | 1,126 | 4,515 | 20,604 | 61 |

Bureau of Agricultural Economics. Production and exports compiled from official sources and reports of the International Institute of Agriculture. Production of a number of oilseeds and of animal fats and oils omitted because of lack of data.

[1] Includes cottonseed, soybeans, peanuts, and flaxseed. Production in China excluded in cottonseed, soybeans, and peanuts: China and U.S.S.R. in flaxseed.

[2] Includes coconut oil, tung oil, palm oil, palm-kernel oil, copra, and palm-kernels.

[3] Preliminary.

a large part of the international exchange of basic agricultural products. As a result, many low-cost areas possessing a comparative advantage in the production of particular commodities are forced to curtail output, while at the same time deficit areas, frequently high-cost and operating at a relative disadvantage, are attempting to expand their output. In some cases where shortages prevail chiefly with respect to particular commodities, for instance, fats and oils in the United States, the effort to expand production is meeting with considerable success. In Continental Europe, however, the output of foodstuffs as a whole has decreased.

### *Probable Situation in the Post-War Period*

Practically all agricultural commodities will be in great demand in the period immediately following the cessation of hostilities. This extraordinary demand for food and fibers for purposes of re-

lief and rehabilitation will temporarily outweigh and conceal the operation of longer time supply and demand influences. After a period of time, however, basic disequilibria between supply and demand will become apparent for many important agricultural commodities. In some cases bad situations which prevailed before the war will reappear, perhaps in an aggravated form, and as a result of the war new maladjustments will have been produced.

The extent of these maladjustments will be related in considerable degree to the duration of the war, to industrial activity and consumer incomes throughout the world, and will depend upon the degree to which sound trade and general economic policies are adopted by various countries, and upon the length of the initial period of relief and reconstruction. These same factors will have an important bearing upon the length of time which may elapse between the cessation of hostilities and the appearance of a condition of unbalance between the production and consumption of important products. This period of time probably will differ as between the various commodities, but bad situations probably will begin to develop in from 2 or 3 to 5 or 6 years.

It is not to be expected that post-war surplus problems will automatically solve themselves. Positive measures of correction will have to be applied, not only because of the magnitude of the maladjustments which will prevail but also because protectionist sentiment will be strong, and the legacy of trade restrictions carried over from earlier years will be very great. In the following section an attempt is made to describe the situation with which reform measures will have to deal if chronic surpluses are not to develop. Obviously, appraisals of the post-war positions of the various commodities cannot be in specific quantitative terms but must necessarily be general, indicating the direction of change rather than the exact amount and describing the relative magnitudes involved.

### *Commodities in Chronic Surplus Before the War*

Some increase in the demand for and consumption of cotton, wheat, sugar, and coffee is to be expected in the post-war period. However, surpluses probably will reappear unless measures to reorient production in accordance with the principle of comparative advantage are put into effect. In the importing countries in which production has been reduced due to the war, in the absence of attractive alternatives, producers will return to patterns of produc-

tion which accentuated the surplus problems of the interwar period. In areas in which output has increased during the war, growers will demand protection from their Governments. Unless such demands are met by governmental encouragement of the production and consumption of needed alternative products, producers will not curtail output, and uneconomic production may persist for some time.

The extent to which cotton production will be expanded in areas outside the United States will depend partly upon the cotton policy of this country. If the United States maintains a high price for American cotton relative to that of foreign growths, this will be one factor stimulating the production and consumption of foreign cotton as was the case during the interwar period. Prior to the war the trend of world cotton consumption was upward and the continuation of that trend is to be expected. Furthermore, insofar as the expansion of cotton manufacturing in the less industrialized countries lowers the cost of manufacturing cotton textiles, cotton consumption and the demand for raw cotton will be increased. If the maintenance of such expanded manufacturing capacity is dependent upon the indefinite continuation of protective tariffs, however, consumption of cotton goods will be smaller than otherwise would be the case. In any event, it is practically certain that the manufacture of cotton textiles in Asia, South America, and other relatively unindustrialized areas will continue to increase after the war. This will increase the demand for cotton produced in those parts of the world but may react unfavorably upon the export market for American cotton.

As has been previously indicated, the production of rayon was greatly increased in all countries during the interwar period, particularly in Germany, Italy, and Japan. To the extent that rayon replaced cotton due to Axis autarchic policies, industries in these countries will tend to return to cotton. However, their increased use of rayon and synthetic fibers in recent years has been associated with marked technological improvements in production and adaptation to a wider range of uses, and it is unlikely that cotton consumption will be as large as it would have been without the prolonged stimulation of synthetic fibers.

A reduction in trade barriers for sugar would expand consumption in deficit areas where unnecessarily high sugar prices have been maintained, and would secure a more efficient organization

of the world's sugar industry. But adjustments in production must be made if a serious surplus situation is not to continue. Large productive capacities have been built up under protection in Europe, Asia, and elsewhere and even though such protective measures are modified, a considerable part of this capacity will continue to be used. If such measures should not be relaxed, sugar production in these protected areas will continue at, or even rise above, levels prevailing before the outbreak of war. Cuba, Java, and Puerto Rico possess large low-cost capacity and few attractive alternatives to which producers can turn.

As has been previously indicated, wheat stocks in exporting countries are at a record high. Large quantities will be needed for post-war relief, and large amounts of United States wheat are being utilized for the feeding of livestock and in industrial operations. However, notwithstanding a probable upward trend in consumption, world wheat capacity after the war will continue to be so large that, in the absence of a program to reorient production, a chronic surplus situation will continue. This will involve prices too low for even the more efficient producers, a waste of producer resources, and drains on Government funds.

An important factor in the post-war wheat situation is the existence of an informal and temporary wheat agreement. The agreement is designed to prevent a deterioration in the world wheat situation after the war, pending the calling of an international conference to formulate a more comprehensive wheat agreement.

Short crops in Brazil in recent seasons probably would have alleviated the coffee surplus situation had it not been for the drastic curtailment of coffee exports due to the present war. Furthermore, there is some evidence that successive seasons of low prices and Government restrictions on the planting of new trees had begun to influence Brazilian production. However, coffee production in countries competing with Brazil probably will continue to increase.

### *Possible New Surpluses After the War*

*Rice.* While some increase in the demand for rice may be expected in the post-war period, it is unlikely that this will be in proportion to the increase in supplies seeking market. Oriental rice will again enter world markets, and this will require an adjustment in the expanded productive capacity which has been built up outside the Orient. During the 1930's, South America shifted from a

net importer to a net exporter of rice, and production has expanded since the beginning of the war. Brazil and Ecuador, two of the important rice-producing countries, are now supplying most of the rice imports of other South American countries, replacing rice formerly obtained from Italy, Southeastern Asia, and the United States. British Guiana, the second largest exporter in this area, ships chiefly to the West Indies and other Caribbean markets. Chile, an importer up to 3 years ago, has become an exporter. In 1942 rice acreage in the United States was more than 1,500,000 acres compared with 856,000 from 1932 to 1936. Exports increased with the cutting off of supplies from the Orient but a large export market at prices profitable to American producers cannot be expected in the post-war period.

*Oilseeds, fats and oils.* Notwithstanding an upward trend in consumption, it is likely that the world within a few years after the war will be confronted with a surplus of fats and oils unless special measures to increase consumption or adjust production are taken. Chief among the surplus items will be copra, palm oil, and palm kernels in the Philippines, East Indies, Malaya, and West Africa; soybeans in Manchuria and the United States; cottonseed in India, Egypt, and Brazil; peanuts in India and Africa; linseed in Argentina and India; castor beans in India and Brazil; probably lard in the United States; perhaps tung oil in China, and probably whale oil.

The world was approaching a surplus position in fats and oils before the outbreak of the present war, a situation which was partly due to artificial deficits created in some countries, notably Germany, through measures to promote economic self-sufficiency. It is doubtful, however, whether the tremendous increase in production of fats and oils which took place during the interwar period would have been absorbed even if there had not been restrictive trade barriers. World peanut production increased threefold, soybean production nearly doubled, exports of coconut oil and copra nearly trebled, and large palm tree plantations were established in the East Indies and West Africa. The production of sunflower, rape, sesame, and poppy seed increased in Asia, Europe, and South America and the harvest of wild babassu nuts in Brazil was expanded. All materials yielding industrial oils, such as castor beans, tung nuts, and perilla seed were increased, whereas world production of whale oil increased more than sevenfold.

After the war the upward trend in production outside the United States will probably be resumed, and in addition production of oils in the United States will be on a much higher level. Soybean production in the United States has more than doubled in the past 2 years and peanut production has expanded greatly. Domestic demand for these products will be larger after the war, but cannot be expected to be in proportion to the increase in supply once international trade in fats and oils has been restored. The output of linseed in the United States, Canada, and Mexico, likewise has experienced a notable expansion. In the United States and Canada, production costs are high and output probably cannot be long sustained at the war peak without subsidization or high tariff protection. A difficult problem will be involved, however, in readjusting production to economic levels.

### *Some Conditions Necessary to the Avoidance or Removal of Chronic Surpluses*

The consideration of measures designed to correct fundamental maladjustments by shifting production out of commodities in chronic surplus necessarily implies the shifting of productive factors to other commodities. Although the matter of such alternatives cannot be treated here, it may be pointed out that meats, dairy products, and fruits and vegetables probably will be in great demand not only during the period immediately following the war but will offer possibilities for increased production and consumption for a long period of years. It will take a considerable period of time to restore livestock numbers in Europe and if a long period of world prosperity accompanied by reasonably sound trade policies can be achieved, a considerable expansion in the demand for and consumption of meats, dairy products, and fruits appears probable. Large stocks of wool are now held by the United States and the United Kingdom, and several years will be required to dispose of these accumulations. Once this is done, however, a chronic surplus situation should not develop in a world where business activity and trade are on a comparatively high level. If the extremely high taxation and severe restrictions which have applied to the tobacco trade of many foreign countries in recent years are even moderately relaxed, the demand for and supply of the most important types of tobacco should be reasonably well balanced.

In the second place, one of the most important conditions that

must precede a constructive approach to commodity problems is the attainment of political security. It is not sufficient to indicate the responsibility of unwise national economic policy for contributing to the development and the preservation of chronic surpluses. To most of the governments which adopted measures which were unwise from a general economic point of view during the period between World War I and World War II, the measures seemed necessary for the economic and political security of their people, and they accordingly felt that they had no choice but to take the course they did. The world in the interwar period was to a considerable extent characterized by economic and political anarchy, and under such conditions governments tended to look at economic policy from a short-run and a nationalistic point of view.

In addition, measures for shifting production will be more likely to achieve their goal if a reasonable level of economic activity can be maintained and if the burden of idle resources does not handicap the transfer of these resources from one use to another. During the great depression of the 1930's the slump in demand and the general deterioration of economic relations between nations led to a disruption of international trade, created serious exchange problems for many countries, and made it difficult for them to adopt a cooperative program for the adjustment of production. Only in a prosperous society do the factors of production have sufficient mobility to enable widespread shifts to be made without excessive disorganization.

Finally, the interdependence of national and international policies must be fully recognized if measures for reorienting the production of surplus commodities are to succeed. Frequently in discussions of post-war problems the point is made that no individual country can go far in making plans for domestic reconstruction and reform unless it knows what the international set-up will be. In most cases, however, the converse is equally true and the effectiveness of international action is largely dependent upon the adoption of appropriate domestic policies.

# A SPECIFIC-RISK SCHEME FOR WHEAT CROP INSURANCE

FRED H. SANDERSON
*Harvard University*

ON JULY 5, 1943 Congress ordered the liquidation by January 1, 1944 of the federal crop insurance system which has been in operation in the United States since 1938. This decision was taken at the insistence of the majority of the House of Representatives after a protracted controversy with the Senate, over the protests of senators and representatives from the high-risk wheat-producing areas of the Great Plains, and against the advice of all three nation-wide farm organizations. The President, while signing the bill, issued a statement regretting the action of Congress and expressing the hope that the question be reopened when Congress returns from its recess:

"If we can make crop insurance work, it will, in my opinion, prove one of the greatest steps taken by the Government toward making farming a sound and profitable occupation. Certainly in these times when the farmer is being urged to produce more and assume greater risks,[1] we should not stop a program which is of such tremendous potential value to him."[2]

It is apparent from the debate that a majority in both Houses of Congress continues to be sympathetic toward the principle of crop insurance and its provision by the Federal Government. There seems to be little doubt that Congress would approve of such a program if it could be put on a sound actuarial basis. Evidently, the majority of the House felt very strongly that such a basis was lacking in the present scheme.

## *The Experience of the United States with Federal "All-Risk" Crop Insurance*

The system of crop insurance which has been in operation during the past four years was of the "all-risk" type.[3] During the first

[1] The 1944 production goal for winter wheat of the Department of Agriculture calls for a 26 percent increase in acreage over 1943. This will involve the plowing-up of a vast high-risk area in the "Dust Bowl."

[2] The President's statement on crop insurance, July 12, 1943.

[3] A description of the essential features of the federal crop insurance program was given by W. H. Rowe and L. K. Smith in United States Department of Agriculture Yearbook, 1940, pp. 755–770. For a balanced, exhaustive appraisal of three years of federal all-risk wheat crop insurance, see J. C. Clendenin, Federal Crop Insurance in Operation, Wheat Studies of the Food Research Institute, Stanford University, Vol. 18, No. 6, March 1942, pp. 229–290.

three years of its existence it was limited to wheat. Under this program, an over-all insurance, covering 75 percent of the average farm yield, was offered against all sorts of damage by natural destructive forces. It was assumed throughout that the crop gets "normal care." However, in order to meet the problem of special farming practices, three special actuarial categories were established for summer-fallowing, irrigation, and spring instead of winter seeding. Premiums and loss payments were calculated in bushels of wheat in order to eliminate the price hazard. In 1942, the insurance was extended to cotton.[4]

The actuarial difficulties inherent in a plan of this kind are very great. The available yield records are usually not sufficiently long, detailed and reliable to serve as a basis for the calculation of equitable premiums. Moreover, because of the importance of human control in crop yields, it is not sufficient to calculate premiums on the basis of the loss experience in the past. The elimination of the "moral hazard" is contingent on our ability to separate the year-to-year fluctuations in yields due to natural agents from those due to human factors. The experience gained in four years of federal crop insurance in the United States, as well as the failure of numerous attempts at "all-risk" crop insurance by private companies[5] seem to indicate that such a separation is impossible in an "all-risk" scheme.

About 6 years ago when the plans for federal crop insurance were still in their initial stages, the proponents of the present system were warned that considerable underwriting losses were to be expected. This prediction has been borne out by the facts. Underwriting losses averaging four to five million dollars per year, representing an excess of about 50 percent of losses paid over premiums collected, have been incurred in four relatively good crop years, in which reserves should have been accumulated. In addition, administrative expenses averaged about 6 million dollars per year, two thirds as high as the amount of premiums collected.

### *Causes of Deficit*

Apologists of the present all-risk program in both branches of Congress have argued that its failure to be self-supporting resulted from faulty administration which in turn was due to the lack of

[4] The following analysis of the experience to date will be confined to wheat.
[5] Clendenin, *op. cit.*, pp. 275–277.

experience on the part of the Corporation. They expressed confidence that these errors would be corrected as more data accumulate. Others have pointed to the fact that a deficit had to be incurred during the first years in an effort to make the insurance attractive to a substantial number of farmers.

No doubt errors have been made in the administration of the program. It may also be granted that part of the deficit has been incurred intentionally as an "educational subsidy" to encourage the use of crop insurance. The law provided, for instance, that the operating expenses were to be borne by the public. Some underwriting losses may have been incurred with the same purpose in mind. We shall later look into the merits of this subsidy. However, the bulk of the underwriting losses suffered by the Crop Insurance Corporation was unintentional and must be ascribed to adverse selection of risks. The principal causes of adverse selection are the following:

1. In the absence of satisfactory yield records for individual fields, premium rates had to be established on a farm-average basis, a procedure which has encouraged the utilization of poorer land for wheat. Wheat may be seeded in a rotation sequence which, although good as a whole, is unlikely to produce a heavy wheat crop. On a rotation farm, insurance was often purchased only in years when less productive fields came into wheat.

2. The averaging of premium rates for individual farms with the mean county rates[6] discriminates against farms with low variability of yield (that is, low loss costs), and therefore discourages participation of such farms.

3. In areas where wheat is heavily dependent on soil moisture accumulated before seeding time, as in the Great Plains, insurance sold freely when soil moisture was low, but hardly at all when moisture conditions presaged a good crop.

4. Certain features of the scheme made a heavy loss, justifying abandonment and thus permitting a saving in input, more desirable to the insured than a moderate loss. This may have resulted in abnormally light seeding when seed beds were dry. When poor yield prospects became evident at any time during the season, neglect of fields may have appeared profitable.

Advocates of the all-risk program have argued that the exploitation of a 75 percent coverage is not ordinarily profitable, for it

[6] See W. H. Rowe and L. K. Smith, *op. cit.*, pp. 760–761.

covers little more than cash outlays. This does not seem to be true where wide fluctuations in yields are prevalent. (There can be no question, however, that an increase in the coverage would have aggravated the situation.) It has also been said that, in the case of wheat, the moral hazard is insignificant because the crop requires little care. On the other hand, it was shown that the frequency of change in occupancy of wheat farms is very high, a circumstance which is not conducive to the maintenance of a high level of efficiency in farming.

### *Merits of Subsidy*

No doubt a good case can be made for the subsidization of the initial stages of a sound crop insurance program to encourage participation. The amounts involved are small in comparison with the size of the general agricultural program and the possible benefits might well be worth the price. There is, however, definite evidence that this particular subsidy tended to have effects which are undesirable from the point of view of an efficient and well-balanced agriculture. To be sure, some of the possible adverse effects (such as general encouragement of wheat and cotton production at the expense of uninsured crops) were mitigated by the fact that compliance with the AAA allotments and cooperation with the soil conservation program were practically prerequisites for participation. But certain features of the system were definitely harmful. Being based on past yield experience, the system tended to discourage improvements which would lead to increased average yields. In many instances, it led to the subsidization of inefficient farming practices and to reduced production. Owing to the above-mentioned actuarial imperfections, the system also involved a subsidization of high-risk farms by low-risk farms within each region, and of high-risk areas like the Great Plains, where pre-deadline selectivity is a major factor, by low-risk areas. Clearly, further subsidization of the program seemed advisable only if it could be freed from these undesirable features.

### *Possibilities of Improving the All-Risk Scheme*

It is true that some of the defects of the all-risk scheme might have been remedied or at least mitigated. The methods of determining average yields might have been tightened up and premiums might have been increased gradually until they would cover operating expenses and allow for an irreducible minimum of bias in

estimating average yields. Any trend in yields due to improved farming practices could perhaps be taken into account so that technical progress is not discouraged. Since in some states soil moisture conditions permit farmers to judge their crop prospects prior to the deadline date for insurance applications, two-year contracts, stipulating one year's advance notice for cancellation after that period, have actually been required beginning with the 1942–1943 crop year. Other possibilities of dealing with this problem would be to advance the deadline, or to surcharge the initial premium in a series, to encourage steady renewal of the policy. As more data would have accumulated, it might have been possible eventually to compute premiums for individual fields. This, however, would involve administrative expenses of considerable magnitude. Adverse selection of years and the problem of rotation might have been overcome by making participation compulsory and by extending the insurance to other crops. (This would seem advisable only if insurance contracts can be worked out which represent a more nearly even-balanced bargain for each farmer.) There is, however, no way of eliminating the moral hazard under a system of all-risk crop insurance.[7] This and high operating expenses are intrinsic weaknesses of any all-risk scheme of crop insurance.

We may conclude that the failure of the crop insurance program of the United States to be self-sustaining was not due to unfavorable weather; it resulted only in part from faulty administration and the lack of appropriate data; it was only partly a matter of government policy. To a large extent, the underwriting losses incurred by the system must be ascribed to the impossibility of preventing adverse selection of risks and, particularly, losses due to the deliberate action of the insured. This difficulty is inherent in any all-risk plan of crop insurance.

### *The Case for a "Specific-Risk" Scheme of Crop Insurance*

It is well known that the few well-established kinds of crop insurance (hail, frost, flood) are based on the principle of specific risks. Even the Soviet government, which is comparatively unhampered by considerations of financial accounting and powerful

[7] A suggestion by Clendenin (*op. cit.*, page 243) to determine the effect of variations in farming practices "by schedule-rating each applicant's intended operations in the manner of a fire company rating an industrial fire risk" seems hardly practicable, if only because of the difficulty of verifying the execution of each farmer's intentions.

enough to make crop insurance compulsory, has limited its crop insurance program to damages that are readily ascribable to specific causes (hail, storms, floods, frost, fire, smothering). Non-indemnification of losses due to the negligence of the insured has been a cardinal tenet of Soviet insurance policy.[8] As a rule, only those schemes of crop insurance have been successful which afford protection against specific risks only.

It is now generally recognized, on the other hand, that crop insurance needs to be extended to cover the more important but less easily assessable crop hazards resulting from the general weather conditions during the growing season. An insurance of this kind would at the same time afford a measure of protection against damage caused by diseases and insect pests, such damage being largely controlled by weather factors.

*Crop Insurance Based on Weather-Yield Relationships*

When the present over-all crop insurance plan was decided upon, it was apparently felt that the existing analyses of the effect of weather factors on crop yields are not sufficiently reliable to serve as a basis of crop insurance. It has also been argued that a system based on weather-crop relations would be hard to explain to the farmer. The latter objection may be dismissed, however, since much more complicated insurance contracts are successfully sold to the public.

It is true that the presently available knowledge of weather-crop relationships is inadequate to serve as a basis for a general crop-insurance program of such ambitious scope as the scheme which has been in operation in the United States. It can be demonstrated, on the other hand, that a crop-insurance program based on weather-crop relationships could function successfully in certain regions. It so happens that the most dependable knowledge of the meteorological causes of yield is available for high-risk areas such as the Great Plains, where crops are dominated by the one important factor of summer drought. In these regions, such an approach would undoubtedly be superior to the present all-risk insurance.

The operation of a scheme of this kind would be extremely sim-

[8] Protection against drought and insects is offered only for special crops the production of which the government wishes to encourage. See Lazar Volin, Crop Insurance in the Soviet Union, *Foreign Agriculture*, Vol. 1, September 1937, pp. 447–452.

ple. Certain meteorological factors known to be important in determining yields are selected and correlated with yields over a period which must be sufficiently long to supply a representative sample of the local climate.[9]

In the states of North Dakota, South Dakota and Montana, for instance, it was found that variations in spring wheat yields can be "explained" or predicted with a high degree of confidence on the basis of three factors which are generally recognized as the most important determinants of yield in the Great Plains, namely: Precipitation during the months of September, October, November and December preceding harvest, June average maximum temperature, and July average maximum temperature. The influence of preseasonal precipitation is due to its role in replenishing subsoil moisture reserves. Under the climatic conditions prevailing in the Great Plains, lack of subsoil moisture means almost certain crop failure unless the precipitation during the growing season is exceptionally plentiful. High midsummer temperatures are particularly harmful to crops in the Great Plains, because the greatly increased evaporation dries up water supplies when the moisture requirements of the crop reach a maximum.[10] In midsummer, average maximum temperature is also a good indicator of the amount of precipitation received. It was observed, in fact, that maximum temperature is a better measure of variations in the conditions that give rise to the localized rainstorms prevalent in summertime than the actual measurements of precipitation at a limited number of meteorological stations.

---

[9] The weather factors should be chosen on the basis of prior knowledge and without reference to the particular "sample" at hand. The mathematical form of the relationship between the variables must also be fully specified before the sample is "drawn." Such "complete specification" of the hypothesis is an indispensable condition for the validity of any test of significance, prediction, or confidence statement based on the regression or correlation coefficients.

The prediction value of many crop forecasting formulae put forward in the past has been subject to discount because these formulae were the result of considerable experimentation with a great number of variables and curve types with a view to fitting the peculiarities of a particular scatter. The greatly increased probability of obtaining stated high correlations from random data tends to reduce drastically the significance of correlation coefficients obtained in this way. This problem will be discussed by the writer in greater detail in a forthcoming article on The Validity of a Forecasting Formula.

[10] A careful analysis, by means of a regression integral, of spring wheat yields at Dickinson, N. D. indicates a critical period during the 40 days prior to heading (that is, during the period from June 1 to July 10). See F. E. Davis and J. E. Pallesen, Effect of the Amount and Distribution of Rainfall and Evaporation during the Growing Season on Yields of Corn and Spring Wheat, *Journal of Agricultural Research*, Vol. 60, January, 1940, pp. 1–23.

In the period 1921–1940, the three factors in question were found to explain 86 percent of the variations in spring wheat yields in South Dakota, 75 percent in Montana, and 74 percent in North Dakota. In Montana, the introduction of spring (April–May) precipitation into the analysis raised the coefficient of determination (squared correlation coefficient) from 0.75 to 0.86.

The regression formulae obtained from these analyses may be used as a basis for estimating crop losses due to drought. In South Dakota, for example, the regression formula is as follows:

$$x_1 = +1.426\ x_2 - 0.428\ x_3 - 0.227\ x_4 \qquad \text{(I)}$$

where $x_1$ is the yield of spring wheat (in bushels per acre seeded), $x_2$ total preseasonal precipitation (in inches), $x_3$ June average maximum temperature and $x_4$ July average maximum temperature (in degrees Fahrenheit).[11]

In North Dakota, the corresponding equation is

$$x_1 = +0.876\ x_2 - 0.505\ x_3 - 0.238\ x_4, \qquad \text{(II)}$$

where $x_2$ is the total precipitation during the three months of September, October and November. In Montana, the regression of yield on September to December precipitation, June average maximum temperature, and July average maximum temperature is

$$x_1 = +0.819\ x_2 - 0.425\ x_3 - 0.866\ x_4. \qquad \text{(III)}$$

If April-May precipitation is included as an additional variable ($x_5$), the equation reads

$$x_1 = +1.146\ x_2 - 0.495\ x_3 - 0.597\ x_4 + 1.243\ x_5. \qquad \text{(IV)}$$

All variables are expressed as deviations from their means.

It appears from the regression formula for South Dakota that, *ceteris paribus*, a one-inch deficit in preseasonal rainfall leads, on the average, to a deficit of 1.426 bushels in yield per acre seeded. Every degree of June maximum temperature in excess of the average results in a yield deficit of 0.428 bushels. In July, every degree

[11] The meteorological data are weighted state averages. The weights are based on the distribution of the wheat acreage by meteorological divisions as computed from the census enumerations for 1919, 1924, 1929, 1934 and 1939. These variable weights go a long way toward taking care not only of the unequal distribution of the wheat acreage within each state, but also of geographical shifts in the acreage during the period covered by the analysis. The meteorological series derived in this way are considerably more representative of the weather conditions experienced in the spring wheat area than the straight state averages of all meteorological stations computed by the Weather Bureau.

of maximum temperature in excess of the average causes a deficit of 0.227 bushels.[12]

Suppose this formula is accepted as a basis for crop insurance. For every inch of preseasonal rainfall below the average, each participant will then be credited with a claim on 1.426 bushels per acre seeded; he will similarly be credited with 0.428 and 0.227 bushels for every degree of average maximum temperature in excess of normal recorded during the months of June and July, respectively. On the other hand, he will be debited with 1.426 bushels per acre for every inch of preseasonal precipitation in excess of normal, and with 0.428, and 0.227 bushels for every degree of average maximum temperature below normal in June and July, respectively. We then compute the balance of these credits and deductions. If this balance is positive (credits exceeding deductions), it will represent the presumable net loss (expressed in bushels per acre) suffered by the insured through unfavorable weather, for which he is to be compensated by the Crop Insurance Corporation. If the balance is negative (deductions exceeding credits), it will represent the presumable excess of the current year's yield over the long-time average, which he owes to the Corporation.[13]

So far as the actual payment of his debt to the Crop Insurance Corporation is concerned, the applicant may be given a choice between two types of contract. If the applicant wishes to have his presumable net yield, after payment of the premium, approximately stabilized at his farm normal (minus his share of the oper-

---

[12] The question may be raised whether these additive multiple linear regression equations are adequate models of the actual relationships between weather and wheat yields. Further investigation showed, however, that for the range of weather conditions experienced in the three states, there was no evidence of curvilinearity in the weather-yield relationships. Another supplementary hypothesis, involving interdependence of the effects of preseasonal and seasonal weather, was also tested, with negative results. However, additional factors might conceivably be taken into account in the estimating equations. The conditions within each state seemed to be sufficiently homogeneous to obviate the necessity of further subdivision of the states into counties or crop reporting districts.

[13] To give a numerical example, suppose (a) preseasonal precipitation was 0.5 inches below normal, while (b) the average maximum temperature was 10 degrees below normal in June and (c) 2 degrees above normal in July. In this case, every participant will be credited with 0.713 bushels per acre on account of (a) and with 0.454 bushels on account of (c). The total credit will amount to 1.167 bushels. However, 4.280 bushels will be deducted on account of the favorable June weather, leaving the insured with 3.113 bushels in the red. If the June temperature had been only 1 degree below normal, the insured would have been credited with $0.713+0.454-0.428=0.739$ bushels per acre.

ating expenses of the system), he may be offered a contract (Type I) according to which the entire presumable excess over the average yield as indicated by the weather factors will be turned over by him to the Corporation as a premium. In years in which the presumable yield is below normal, he will pay no premium at all, but will be compensated for the presumable yield deficit. In this manner, his yield will be approximately stable (so far as a specific-risk scheme can assure stability to the individual farmer), but the premium will vary from year to year according to the presumable deviation of yield from the average, as computed from weather factors. The payment of the pro-rata to cover the operating expenses of the system may be effected in the form of a fixed annual fee.

It is possible, however, that many farmers will prefer to assure themselves of a minimum yield and to pay a fixed annual premium for this protection. Suppose this minimum is the average yield, before payment of the premium. While it will not be possible for the farmer to obtain a guarantee in terms of actual bushels on his farm, he may be offered a contract (Type II) according to which he will be compensated whenever the presumable yield for the state, as indicated by the weather factors, is below the long-time state average of 8 bushels, the Corporation making up the difference. In South Dakota, the average amount of loss payments per annum under this contract would be about 1.7 bushels per acre. This, plus a contribution to the operating expenses, would be required as a premium to enable the Corporation to meet its obligations under the contract without incurring a deficit. The administrative expenses should not exceed $\frac{1}{4}$ bushel per acre, since the operation of the scheme does not necessitate the collection of extensive data on yield per acre for every farm. The total premium may therefore be assumed to amount to about 2 bushels per acre, leaving the average grower with a minimum presumable net yield of about 6 bushels per acre.[14]

The predicted average loss payments under this plan are based on the losses which would have been experienced during the period 1921 to 1940. The computation of the premium as well as the indemnities which would have been paid in the past under two diff-

[14] Under the above contract, the total amount of premium payments will in the long run be the same as in Type I; the annual payments, however, will be spread evenly over time.

erent coverages are indicated in Table 1. In this table, the "presumable" state average yields, as computed from weather factors, are shown together with the actual yields. It can be seen that the two series are generally in close agreement. In South Dakota, the computed yield was below the long-time average of 8.0 bushels per acre in 1921, 1926, 1931, 1933, 1934, 1935, 1936, 1937, 1938, 1939, and 1940. The loss payments in these years would have been, respectively, 1.0, 3.1, 1.5, 6.0, 6.5, 1.0, 7.7, 1.2, 2.0, 0.9, and 3.0 bushels per seeded acre, or a total, for the 20 years, of 33.9 bushels. The premium is computed by averaging this amount over the period: $33.9/20 = 1.70$ bushels per acre would be required annually to cover these losses.

The Type II contract would tend to put a floor under yields; in the above example, this floor would be about 2 bushels below the long-time average yield, after payment of the premium. But again, the "guarantee" is in terms of the "presumable" yield deficit for the state, not in terms of the actual yield deficit on each individual farm.

Though those farmers who feel that they can not afford to pay a premium of 2 bushels per acre, a lower protection—say a guaranteed minimum presumable yield of 75 percent of normal before premium, corresponding to a state average yield of 6.0 bushels[15]—may be offered at an annual premium of 0.82 bushels per acre seeded plus administrative fee. Under this contract, indemnities would have been paid in 5 years: 1926, 1933, 1934, 1936 and 1940. The total amount of loss payments for the 20-year period would have been $1.1+4.0+4.5+5.7+1.0=16.3$ bushels per acre. In North Dakota, a 100 percent coverage of the long-time average yield (before premium) might be offered at an annual premium of 1.16 bushels plus administrative fee. A 75 percent coverage of the normal yield before payment of the premium may be offered in this state at a premium of 0.54 bushels per acre plus administrative fee. In Montana, a 100 percent coverage (before premium) might be secured at a premium of 1.65 bushels per acre plus administrative fee. A 75 percent coverage of average yield (before premium) could be offered at a premium of 0.75 bushels per annum plus administrative fee.

[15] This is a "75 percent coverage" on the average farm only. It may more correctly be defined as a coverage "2 bushels below farm average yield." On a farm whose average yield is above the state average (say 10 bushels instead of 8), a $10-2=8$ bushel coverage would represent 80 percent of the farm average yield.

TABLE 1. LOSS EXPERIENCE 1921–1940, AND COMPUTED PREMIUM RATES PER SEEDED ACRE

| Year | South Dakota | | | | North Dakota | | | | Montana | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | State average yield per seeded acre | | Loss cost per acre | | State average yield per seeded acre | | Loss cost per acre | | State average yield per seeded acre | | Loss cost per acre | |
| | Actual | Computed | 100 percent coverage (8.0 bu.) | 75 percent coverage (6.0 bu.) | Actual | Computed | 100 percent coverage (8.8 bu.) | 75 percent coverage (6.6 bu.) | Actual | Computed* | 100 percent coverage (10.6 bu.) | 75 percent coverage (8.0 bu.) |
| 1921 | 8.3 | 7.0 | 1.0 | | 7.9 | 8.7 | 0.1 | | 10.9 | 10.7 | | |
| 1922 | 13.5 | 13.4 | | | 13.8 | 12.5 | | | 15.4 | 15.4 | | |
| 1923 | 8.6 | 11.0 | | | 7.7 | 9.2 | | | 13.9 | 11.8 | | |
| 1924 | 14.6 | 13.4 | | | 15.3 | 13.9 | | | 16.1 | 15.1 | | |
| 1925 | 11.6 | 10.6 | | | 12.2 | 11.7 | | | 10.0 | 12.3 | | |
| 1926 | 4.7 | 4.9 | 3.1 | 1.1 | 8.2 | 9.6 | | | 12.0 | 10.9 | | |
| 1927 | 14.6 | 14.2 | | | 12.9 | 13.8 | | | 20.2 | 20.5 | | |
| 1928 | 10.0 | 12.2 | | | 14.1 | 13.0 | | | 18.7 | 16.3 | | |
| 1929 | 9.2 | 9.7 | | | 9.3 | 8.6 | 0.2 | | 8.0 | 8.3 | 2.3 | |
| 1930 | 11.0 | 11.6 | | | 10.7 | 9.0 | | | 7.7 | 9.2 | 1.4 | |
| 1931 | 5.1 | 6.5 | 1.5 | | 4.0 | 5.8 | 3.0 | 0.8 | 3.2 | 5.1 | 5.5 | 2.9 |
| 1932 | 13.0 | 9.7 | | | 10.1 | 8.9 | | | 11.5 | 10.7 | | |
| 1933 | 1.0 | 2.0 | 6.0 | 4.0 | 6.3 | 4.5 | 4.3 | 2.1 | 6.2 | 6.3 | 4.3 | 1.7 |
| 1934 | 0.2 | 1.5 | 6.5 | 4.5 | 2.3 | 4.9 | 3.9 | 1.7 | 6.1 | 6.5 | 4.1 | 1.5 |
| 1935 | 6.8 | 7.0 | 1.0 | | 5.1 | 9.5 | | | 7.4 | 10.1 | 0.5 | |
| 1936 | 0.9 | 0.3 | 7.7 | 5.7 | 1.8 | 0.4 | 8.4 | 6.2 | 2.6 | −0.3 | 10.9 | 8.3 |
| 1937 | 4.1 | 6.8 | 1.2 | | 5.6 | 7.7 | 1.1 | | 4.2 | 7.4 | 3.2 | 0.6 |
| 1938 | 7.2 | 6.0 | 2.0 | | 7.5 | 8.9 | | | 12.5 | 14.3 | | |
| 1939 | 6.6 | 7.1 | 0.9 | | 9.7 | 8.2 | 0.6 | | 11.6 | 11.6 | | |
| 1940 | 8.6 | 5.0 | 3.0 | 1.0 | 11.0 | 7.2 | 1.6 | | 12.9 | 9.8 | 0.8 | |
| Average 1921–1940 | 8.0 | 8.0 | 1.70 | 0.82 | 8.8 | 8.8 | 1.16 | 0.54 | 10.6 | 10.6 | 1.65 | 0.75 |
| | | | Premium per acre† | | | | Premium per acre† | | | | Premium per acre† | |

* Formula IV.
† Not including contribution to operating cost.

It is quite possible that the above premiums may turn out to be over-conservative, for the period 1921–1940 includes a somewhat abnormal proportion of drought years.

The final date for the receipt of crop-insurance applications should not be later than August 31 of the year preceding harvest. Furthermore, long-term contracts should be required, subject to termination on not less than one year's advance notice. Steady renewal of the policy should be encouraged by a system of bonuses. Continuous participation is not only desirable from the point of view of administrative economy but it is essential to the elimination of an important source of adverse selectivity. Even if the amounts of precipitation received were completely independent in successive years, the resulting annual averages of soil moisture, being in the nature of moving totals of precipitation, might be expected to show evidence of positive serial correlation.[16] Moreover, the annual totals of precipitation may themselves show a tendency to occur in "runs." Consequently, a good crop is more likely to be followed by another good crop, and vice versa. This is particularly evident after years of plentiful precipitation. In such years, favorable crop prospects may be anticipated in the Great Plains for the following year solely on the basis of the soil moisture carried over from the preceding year. Where crop insurance contracts are renewable every year, the "in-and-outers" are likely to take advantage of this knowledge.

### *Analysis of the Plan*

It is an essential feature of the plan that loss payments and premiums are not based on the actual loss experience of the individual farm, but on the presumable loss computed from weather records. For each inch of preseasonal rainfall below the average, the insured will be entitled to a loss payment of so many bushels per acre (subject to deductions on account of favorable weather in midsummer), regardless of his actual loss, and premiums are computed in such a manner as to cover the expected average loss payments plus operating expenses. It follows that any loss due to the carelessness of the farmer would be borne by the latter, for the

[16] Many apparent "cycles" in the records of the water level of lakes, in the annual averages of soil moisture, and in crop yields can probably be explained by this phenomenon of moving summation. See Eugen Slutzky, The Summation of Random Causes, as the Source of Cyclic Processes, *Econometrica*, Vol. S, April 1937, pp. 105–146.

payment of benefits is completely independent of his actions. The farmer is not protected against crop failures as such, but only against the estimated effect of unfavorable weather conditions.

This estimate will not be entirely correct for the "average farm" in any given year, and even less so for an individual farm. The question may therefore be raised: Will this guarantee of a "presumable" average yield (Type I contract) or of a "presumable" minimum yield (Type II contract) satisfy the need of the individual participant for a stable physical yield?

The degree to which this need is satisfied will depend (1) on the correlation existing between the weather factors included in the estimating equation and the state average yield, and (2) on the degree of similarity in the response of individual-farm yields to fluctuations in these weather factors.[17] Obviously, perfect results could be expected only if the regression equation holds exactly for each farm, without error. Generally speaking, the plan will therefore afford a measure of protection to the individual participant which will depend on the adequacy of the estimating equation in "explaining" yield variations on his farm. However, no matter how unsatisfactory the plan may be for such individual farms as may be subject to special conditions, every participant is sure to break even in the long run.

The working of the plan in certain special situations may be illustrated by the following examples. Farmer A's crop is subject to the weather conditions generally prevailing in the state, but owing to special care, or above-average fertility of the soil, his average yield is 10 bushels per acre instead of 8. Farmer A will be entitled to a loss payment in case of unfavorable weather just like any other participant, even though his actual yield in that year may be

---

[17] An interesting variant of the crop-weather scheme has been suggested in this connection. Instead of being based on the "presumable" state average yields as estimated from weather factors, the premiums and indemity payments might be computed directly from the *actual* state average yields shown in Table 1. This plan would eliminate that part of the error variance which results from the inaccuracy of the estimating equation in "explaining" the state average yields. It may be expected to work satisfactorily in regions in which the weather-crop scheme works. Like the latter, its applicability is contingent on the similarity of the response of individual-farm yields to some dominant ecological factors.

For the operation of this alternative plan, the collection of unbiased estimates of yield per acre is, of course, an essential prerequisite. With indemnity payments dependent on their reports, crop correspondents could probably no longer be trusted with this function. The estimates of the state average yield per acre would have to be based on an objective sample survey involving actual weighings such as preharvest wheat surveys of 1938, 1939 and 1940.

above the state average (or, for that matter, above his own farm average). The value of the insurance to the individual farmer is not affected by differences in the average *level* of farm yields.

Farm B is a farm with above-average *variability* of yield. The insurance (of Type I) will tend to reduce the fluctuations in physical returns on this farm, but will not eliminate them entirely.

Farm C is a farm with very low variability of yield. If this farmer takes out a contract of Type I, he may have more wheat to sell in years in which the average yield in the state is low than in years in which the average yield is high. This may be advantageous since prices tend to be high in years of low yield. The price advantage may make the insurance attractive to low-variability farms such as irrigation farms. It also represents an incentive to reduce yield fluctuations on one's own farm.

Farm D is subject to the climatic conditions generally prevailing in the state, but suffered heavy non-insured damage (grasshoppers, hail, etc.). In this event, provision must be made for the deferment of the usual premium payments, or a loan may be offered at low interest.

An objection which has been raised against the scheme is worth mentioning in this connection. The fact that payments are made regardless of the extent of the actual loss on individual farms, it was argued, makes it a "gambling proposition." It is true that, to a limited extent, the weather-crop plan may be used by growers needing no insurance for the purpose of obtaining above-average yields in drought years, when prices are high. In the opinion of the writer, such use of crop insurance would not be undesirable. The low-risk farmer, by payment of his premium, contributes his share to an "ever-normal granary," including storage costs, and is therefore entitled to benefit from his participation in the pool as he would benefit from storing his wheat on his own account, selling less in years when prices are low and more when prices are high. (There would, in fact, be no objection to a coverage higher than 100 percent of average yield, if the participant deems this advantageous. This would enable even the high-risk farm to sell more wheat in drought years than in years of bumper crops.) Furthermore, the more widespread use of the insurance would itself contribute to stabilizing prices, thus minimizing the opportunities for speculative gain.

We may conclude that, for the crop-weather insurance scheme to

be successful, it is by no means necessary that farm yields can be determined from the weather "without error." What matters is that in the present state of our knowledge, the average yield deficit that results from a certain deficit in rainfall, or from high temperatures, can be computed with sufficient accuracy so as not to lead to any gross discrepancies between losses and indemnities for any one farm in any one year, and that such individual failures of loss payments to equal losses would tend to cancel out in the long run. These conditions are satisfied in any climatically homogeneous area in which a reasonably satisfactory crop-weather formula, based on an adequate sample of local weather conditions, is available. The climate being essentially stable (though not entirely random), a reliable formula can probably be worked out on the basis of weather and yield records for about 20 to 30 years.

It is true that the response of the crop to weather factors varies with cultural practices. With proper care, it is possible to reduce the variability of yields. The physical and chemical character of the soil also affects the responses of the crop to weather influences. Consequently, premiums may seem to be too high for farms with low variability of yields. But this need not discourage participation of such farms, since they would be able to recover, in the long run, in the form of equally high loss payments. The insured may switch from one cultural practice to another without changing his insurance policy, and will still find himself neither benefited nor penalized.

Since, however, the purpose of the insurance is to stabilize, as nearly as possible, the annual yield, in terms of physical quantities, of each farm, it would be advisable to offer a variety of policies each of which is adapted to the conditions of a broad class of farms. Different contracts could be worked out for several types of farming practices and soil conditions, and for geographical units not larger than a county or a crop reporting district. But since there is no risk of loss or gain resulting from variations in farming practices, there is no need of policing the farmer's operations.

Like the "all-risk" system now in operation, the plan does not involve a dollar-value guarantee. It is an insurance in kind. Will it tend to stabilize the individual farmer's income? This will depend (1) on the adequacy of the plan in stabilizing individual-farm yields, and (2) on the extent of participation. With sufficiently wide participation, it will tend to reduce materially price fluctuations

resulting from fluctuations in supply; it will in effect represent an "ever-normal granary" for those regions which contribute most to fluctuations in supply.

No doubt similar schemes could be worked out for other crops and in other parts of the Great Plains region. Owing to the comparative simplicity of the relationships, the effect of changing weather conditions on yield is fairly well understood in the case of winter wheat and corn in the states of Nebraska, Kansas, Oklahoma, and parts of Colorado and Missouri, and for cotton in Oklahoma, Texas, and parts of Arkansas.

### *Advantages of the Plan*

The weather-crop approach to the insurance problem offers certain definite advantages over the present all-risk system.

1. It is not dependent on an accurate knowledge of past yields of individual farms or fields. The presently available records of average yields by counties or even by states would be sufficient for this purpose. No high initial administrative outlays would therefore be required for the collection of detailed data on the yield history of each farm or field, and for the calculation of individual premium rates on every farm. Current administrative expenses would also be low, since loss payments are not based on the actual yield deficits experienced by individual participants, but on weather records which are available without cost.

2. Wide zoning of rates would not lead to the selection of higher risks.

3. The scheme would not tend to penalize farmers for making agricultural improvements resulting in increased average yields.

4. It would be possible to offer the farmer a 100 percent coverage of average yield, instead of 75 percent under the present system. Those farmers, however, who prefer a lower coverage at correspondingly lower premiums may choose any percentage they like.

5. The scheme would not be subject to the moral hazard, since loss payments would be based exclusively on objective weather records and not on actual yield deficits. It would not be profitable for the farmer to neglect his fields when yield prospects are poor, or to favor uninsured crops in the rotation. It would always be in his interest to get maximum production.

The chief disadvantages of the plan are the limited protection it affords (like any specific-risk scheme), and its limited applicability.

Successful operation of the plan is contingent on a fairly reliable knowledge of the influence of the weather on crop yields. Fortunately, such knowledge is generally available in high-risk areas where crop insurance is needed most.

Moreover, the crop-weather plan could be readily supplemented by such related schemes as insurance against hail, frost, winter-killing, etc.—unavoidable losses which can be assessed by an estimator. Specific damages of this kind are usually determined by eye inspection, the adjustor forming some estimate of what the crop would have yielded if the damage had not occurred. This method involves a considerable element of judgment. In the absence of objective methods of estimating yields, indemnities are sometimes based on average yield or investment. With a weather-crop scheme in operation, however, indemnities for damage by hail, frost, winter-killing etc. could be based on the "presumable" (state) yield (or, where the farm average yield is known, on the "presumable" farm yield) which would have resulted from the weather conditions prevailing in that year—a method which is more objective than appraisal by eye inspection, and more accurate than that based on average yield or investment.

# CONTROLLING HOG PRICES DURING THE TRANSITION FROM WAR TO PEACE*

GEOFFREY SHEPHERD
*Iowa State College*

THE FIRST models of any new invention are rough and ready affairs; some of them destroy their creators before they are perfected. Lilienthal's dying words, "We will fly and fall, fly and fall, until we can fly without falling" may need to be invoked several times before we get through with forward price floors for farm products.

The purpose of this paper is to promote the flying and reduce the falling as much as possible. The paper proceeds, first, to lay down some principles derived from economic theory and practical experience that are applicable to price floors for all farm products; and second, to suggest some improvements in the existing floors for one or two specific products.

## *Principles of Operation*

1. The purpose of price floors is two-fold (a) to remove the effects of unpredictable fluctuations in the production of durable crops by storage, and (b) to induce the production of the quantity of each product desired.

2. Price floors should be announced shortly before planting (or breeding) time, so that farmers can lay their production plans in the light of those floors.

If the crop is an annual one, produced only once a year, then one announcement a year is sufficient. If the crop is produced more or less continuously, two or more announcements per year may be desirable.

3. Price floors should extend as far as a production and marketing period into the future, but no farther. The job of estimating future demand and supply is difficult enough as it is, without projecting floors any farther than necessary to affect production plans.

4. The level at which floors are set should be such that the Federal government can support them even in the face of the largest production and the weakest demand that is likely to develop. Support measures in the case of perishable products need to be based upon government purchase and immediate disposition; in the case

* Journal Paper No. J-1146 of the Iowa Agricultural Experiment Station, Ames, Iowa. Project No. 832.

of durable products, government purchases may be supplemented by non-recourse loans, and "immediate disposition" includes storage, but this storage only postpones the disposition. The principle is the same in both cases; only the length of the storage period differs.

These principles apply to all price floors, as the general principles of aerodynamics apply to all airplanes. But different flying operations—bombing, high and low level fighting, etc.—require different types of airplanes, and different farm products require different types of floors. The rest of this article deals with the application of the general principles outlined above to one specific product, hogs, with some incidental reference to corn and other livestock feeds.

### *Hog Price Floors*

The price floors for hogs during the war have been announced only once a year. The announcement in 1941 was made in April. In 1942, the announcement was made in November. In 1943, the new floor of $12.50 per 100 pounds at Chicago presumably would have been announced in November again, but actually was made in September, the morning after Italy's unconditional surrender. The floor announced in 1942 extends 22 months into the future—to September 30, 1944. The floor announced in 1943 comes into effect the next day after the old floor expires, and extends to March 31, 1945.

It would be appropriate to announce floors once a year if hogs were an annual "crop," grown at one time of the year, like corn—if all hogs were spring pigs, for example. But hogs are obviously not an annual crop. For the United States as a whole, the fall pig crop averages about $\frac{3}{5}$ as large as the spring pig crop. Some hogs are farrowed every month of the year. Yet the announcement of the hog price floors in the fall has been timed primarily for the spring pig crop. In the 1942 announcement, the fall crop has been recognized only in the fact that the price floor, announced just before breeding time for the spring pig crop, extends long enough into the future (about two years) to take care of the fall crop as well as the spring crop. The floor announced in 1943 extends only far enough to take care of the spring crop.

Presumably this floor will be followed by another floor, announced six months later for the fall crop. The advantages of announcing hog price floors twice per year and having them extend

for shorter periods than the 1942 floor are very great as the "end of the beginning" of the war changes into "the beginning of the end." When the present strong demand for pork returns to normal peacetime levels after the war and immediate post-war period, hog prices will need to be substantially reduced. When peace returns, the hog price floors will need to be set at lower peace time levels. And since the floor is announced in advance, the announcement needs to be

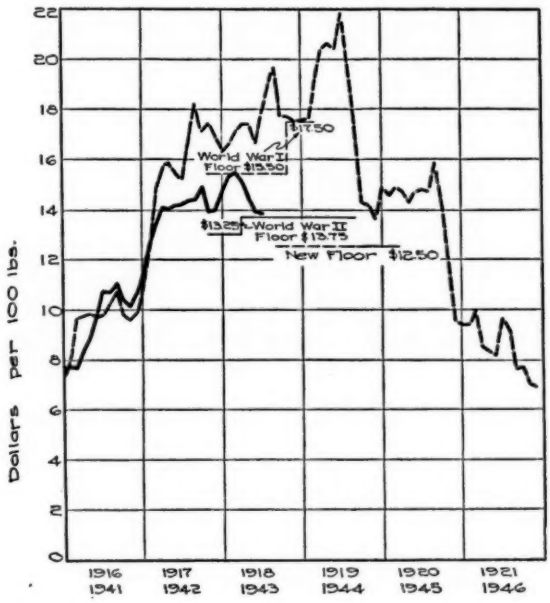


FIG. 1

made nearly a year before the lower floor is to go into effect. Thus at a time when the post-war demand for hogs will still be strong, and hog prices will be high, it will be necessary for the Federal government to announce a sharply lower price floor for hogs. This operation needs to be planned with plenty of foresight.

Figure 1 shows that less than a year after the end of the first World War, the price of hogs dropped from $21.85 in July 1919 to $14.35 in October, only three months later. *That was a fall of $7.50.* That drastic drop in prices was not the result of the post-war depression, for the depression did not begin until 18 months after the end of the war. The severe drop in hog prices that took place less

than a year after the end of the war resulted from the decline in the demand for pork from wartime to normal peacetime levels. It is the sort of decline that is in the cards after the present war, even if there is no post-war depression.

The decline in hog prices should not be so great after this war as it was after World War I. Hog prices are not so high this time as they were then. They are being held down by ceilings on pork prices, backed up by pork rationing, and, since October 4, 1943, by a price ceiling on live hogs of $14.75 at Chicago. Another reason why hog prices may not drop so far so quickly after this war as they did before is that the war may not end all at once this time. It may continue for some time in the Pacific after it has ended in Europe, and the transition from war to peace may not be so abrupt as it was after World War I, when fighting stopped on all fronts simultaneously. The transition is likely to be less abrupt, not because the United States will be fighting less vigorously in the Pacific than before victory is attained in Europe, but because the strong demand for food for reconstruction in Europe may have passed by the time Japan is defeated. And third, it should be possible to use hog price floors in such a way as to moderate the severity of the decline.

*How Can Drastic Declines in Hog Prices Be Prevented?*

Drastic declines in hog prices cannot be prevented, however, simply by pegging hog prices at the floor level. A price floor can hold hog prices higher than they otherwise would be only if it is backed up by Federal government purchases of pork (the pork to be sold later at reduced prices, or given away free) or by subsidies large enough to bridge the gap between the price floor and the level where hog prices would have been without any price floor.

It is difficult to estimate the quantity of pork that the Food Distribution Administration would have to purchase, since the disposition of its purchases would have some depressing effect on the regular market price for pork. But the amount of money that would be required if subsidies are used can be estimated with some approach to accuracy. When World War I ended in November 1918, if the floor of $17.50 had been projected into the future until 22 months after its announcement, the Federal government would have had to subsidize the packers about $3.00 per 100 pounds during the hog year from October 1, 1919, to September 30, 1920. On a hog crop of the 125 million head that is forecast for 1943–44, with an average weight of 250 pounds, that subsidy would cost

$3.00×125,000,000×250/100=$937,500,000—almost a billion dollars. Even if the decline in hog prices was so much less severe this time that only half this subsidy was needed, half a billion dollars would still be a good sized bill for subsidizing one farm product, after wartime needs for subsidizing had passed.

Even if taxpayers were willing to subsidize hogs by this amount after the war, and do the same sort of thing for other farm products, this would not be a desirable policy. It would encourage a continued expansion in hog production, at a time when a reduction from 125 million head to some such level as 80 million head (the average production before the war) would be needed. Supporting hog prices at wartime levels after the war was over would flood a reduced peacetime demand by continuing the production of an expanded wartime supply. This would sooner or later break down the hog price supports.

The first requisite after the war will be to reduce hog production to normal peacetime levels. Measures to reduce production along with the reduction in demand will keep the post-war price decline within reasonable bounds. The best way to bring about this reduction in production in an orderly fashion, without the severe break in prices that occurred last time, is to announce a reasonably lower price floor more than a year ahead of time—before the breeding season for the pig crop that will reach the market at the time of reduced demand. This would let farmers know just how much lower hog prices were going to be before they bred their sows; they would accordingly breed fewer sows, and the pig crop would be reduced to a size that could be moved at the new lower price level.

*Shortcomings of an Annually Announced Floor*

When the time comes to use lower hog price floors after the war, it will be desirable to use two hog price floors each year, one for the spring pig crop, announced in November, and another for the fall pig crop, announced in May. Two benefits would follow from this. Each floor would need to extend only 16 months into the future. This would enable the floors to be set more accurately, at the proper level, than if only one floor per year were used; it is easier to peer 16 months into the future than two years. The last 6 or 8 months are the hardest. The second benefit from the use of two announcements per year would be that reductions in the level of the floor could be made in steps only one-half as great as when only one announcement per year is used.

*The Problem of Overlapping Price Floors*

Whether one, two, or more price floors were announced each year, the new floor or floors would be announced while the old floor was still in effect. This does not create a problem when price levels are rising; the new floor simply obliterates the old. But it does create a problem when price levels are falling.

The situation is simplest when only one price floor per year is announced, in November, to extend 22 months into the future. When the next November comes, the new floor is announced at a lower level than the old. The new floor makes clear to producers what minimum price they can count on for the spring pig crop that has not yet been bred, and for the fall pig crop 6 months later. It does not come into effect, of course, until the old floor has expired. The old price floor continues in force until the following September 30—about 10 months after the new floor has been announced. Then, on October 1, the new floor replaces the old, and remains in effect for a year. The situation is illustrated in figure 2A.

That situation is comparatively simple, although it would require a good deal of publicity before it would be generally understood. If two floors per year were used, one for the spring pig crop and another for the fall pig crop, things would get more complicated. Each floor then would need to extend only 16 months into the future, and two new floors would have been announced before the original floor expired, as figure 2B shows. Only one floor would be effective at any one time—the highest, as indicated by the solid lines in figure 2B—but two new ones would have been announced, to take effect in each case 10 months after announcement and run for 6 months thereafter.

These constant-level floors would create difficulties just at the end of each floor's life if they dropped from the old level to the new at one step. Farmers would send their hogs to arrive at the market just before the floor expired, before the new floor "took over" at a lower level. There would be a heavy concentration of receipts then, and a dearth immediately afterwards. This condition would be only half as bad as if only one floor per year were used, but it would be bad enough. Events near the end of September 1944, when the transition is made from the old floor of $13.75 to the new floor of $12.50, will show on a small scale the sort of thing to be expected on a larger scale with a larger reduction made at one step.

This difficulty could be avoided if the transition to the new lower floor were not made all in one step but were spread out over the entire six months for which each floor would be actually in effect. Thus, the floor announced in May 1944 would start at the same

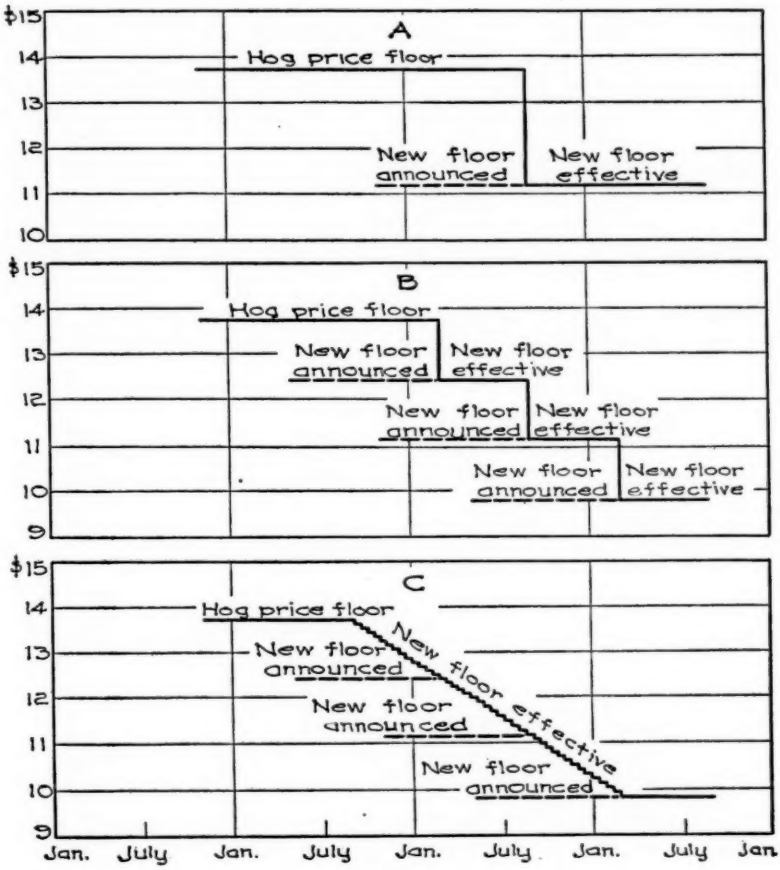


FIG. 2

level as the floor announced the previous fall, and run at that level to September 1945; it would then descend at some such rate as 5 cents per week until its expiration date in April 1946. The next floor, announced in November, 1944 could extend the decline at the same rate, or at whatever other rate was found to be necessary by that time.

A decline of 5 cents per week in the floor would amount to $2.60 per year. This decline, announced in advance of the breeding seasons for the spring crops and fall crops, might be sufficiently great to bring about the required reduction in hog production. If not, it might be necessary to make two reductions of 5 cents each week.

There would be some advantage in using a simple and easily understood rate of reduction such as 5 cents once or twice per week. A more complicated rate would be less well understood by hog producers. Figure 2C was constructed on the basis of 5 cents per week. As slow a reduction as that would be a great improvement, from agriculture's point of view, over the $7.50 reduction that took place in 3 months less than a year after World War I. And it would have a greater effect in reducing production than an equal rate of reduction in prices not known in advance. This would in itself permit a smaller reduction in price than if no price floors were used.

*A Seasonal Movement in the Hog Price Floor*

The forward price floor for hogs during World War I was seasonally flat. It remained constant at $15.50 at Chicago throughout the season. In November, 1918, the floor was raised to $17.50, but it was still kept seasonally flat.

The same thing is true of the floor for hogs during World War II. It was set at $13.25 when it was first announced late in November, 1942, and then raised to $13.75 in March, 1943; in both cases it was to remain seasonally flat until it expired on September 30, 1944. The new floor of $12.50 announced in September 1943 is also seasonally flat.

These seasonally flat floors do not fit the average course of hog prices through the year. The price of hogs normally goes through a seasonal cycle each year, rising about $2.00 per 100 pounds from December to a minor peak in March and a major peak in September. This seasonal change in hog prices is caused by an opposite seasonal change in hog slaughter, which is nearly twice as great, per month, in December and January as it is during the summer months. Hog slaughter is high in December and January because in most parts of the United States spring pigs are cheaper to raise than fall pigs, and the spring pig crop for the United States as a whole is almost twice as large as the fall crop. When these spring pigs come to market in heavy volume in the winter they depress prices about $2.00 below their level in the rest of the year. This

lower level of prices both encourages storage of excess receipts of pork and discourages the tendency for hog farmers to concentrate heavily on the production of spring pigs; it effects a satisfactory compromise between consumers' desires for a fairly stable consumption of pork the year round, and farmers' desires to raise most hogs at the time of the year when they cost least.

Seasonally flat price floors for hogs therefore do not fit the pattern of hog prices under which hogs have been produced in the past. If hog price floors are maintained seasonally flat in the future, that will set up a tendency for farmers to concentrate their production still more on the spring pig crop, so that hog slaughter in December and January will rise to more than twice as great as slaughter in the summer months. This will further increase the load on packing house and transportation labor and equipment in the winter months and further decrease their use during the summer. The consumption of cured and canned pork products can be kept stable by enlarged storage operations (although that will increase storage costs) but the consumption of fresh pork will vary seasonally more than it does now.

The spring pig crop in Iowa averages about 3 times as big as the fall pig crop, but it has ranged from 4 times as big as the previous fall crop in 1925 to only a little more than twice as big in 1934. The same thing is true of Minnesota and Nebraska. The ratio between the size of the spring and fall crops is susceptible to marked change,[1] and a flat price floor in peace-time would result in an undesirable increase in this ratio.

Seasonally flat prices also disturb the previously existing relations between prices in different areas. The receipts of hogs at Chicago are twice as great per month in December and January as they are in April or May, but data compiled by Professor A. J. Brown of the University of Kentucky show that over the period from 1932 to 1939, average receipts of hogs from Kentucky at Cincinnati fluctuated opposite to this, being more than 3 times as great in May as in January. Receipts of Kentucky hogs at Louisville be-

[1] The sizes of the spring and fall pig crops by states for the past 15 years are given in a one-page table in the processed publication "Livestock, Meats, and Wool Market Statistics and Related Data" published each year by the Market News Division of FDA. A chart showing the relations between the spring and fall pig crops by states and years since 1924 is given in Wartime Farm and Food Policy, Memo. No. 6, "The Floor Under Hog Prices," by Geoffrey Shepherd, W. H. Nicholls, and H. O. Drabenstott, Mimeo, Iowa State College, December 3, 1942. The problem of seasonal patterns in hog price floors is discussed in some detail in that publication.

haved similarly, although the fluctuation was not so marked. And at 4 central Kentucky livestock auction markets, the peak comes in October and November, being more than twice as great then as during the lowest points, which are reached in January and February.

Thus Kentucky (and other southern states) enjoy an advantage in hog production by reason of the earlier (warmer) hog crop season. This enables them to get the bulk of their hogs marketed at the time when seasonal prices are high, not when they are low as in the Corn Belt. This gives the southern states an advantage of one or two dollars higher price for the bulk of their hogs over the Corn Belt, relative to the unweighted average seasonal prices in both areas. This more or less offsets their handicaps of higher feed costs and more difficult sanitation problems. Flat seasonal prices rob them of this advantage, while leaving their handicaps as great as before.

The floor for hog prices has been maintained seasonally flat during the war, for several reasons. First is the administrative simplicity of a seasonally flat floor. Second is the fact that many farmers have expanded their hog production to the limits of their spring pig crop capacity, and the great expansion called for in total hog production can be attained only by increasing the size of the fall pig crop whether the price floor is seasonally flat or not. And third, in most areas the spring pig crop can be produced more efficiently than the fall pig crop; in time of war when manpower, feed, and materials are scarce, any tendency to concentrate hog production at the most efficient time of the year should be encouraged, even at the cost of increased seasonal fluctuations in production.

After the war is over, however, these reasons will be less compelling than they are now; some of them will disappear altogether. Then the price floor should follow a seasonal pattern, similar to the average pattern of prices in the past. Otherwise the tendency to concentrate hog production on the spring pig crop, which will be much stronger than it has been during the war, for reasons given above, is likely to concentrate hog slaughter still more heavily in the winter months than in the past.

*Kind of Seasonal Change Required in the Floor*

The seasonal change in the price floor should be similar to the average seasonal movement of hog prices in the recent past. The

nature of this average seasonal movement of hog prices depends upon the length of the period of years averaged, the class and weight of hogs for which the prices are quoted, and the market for which the prices are quoted. The average price of 200–220 pound hogs at Chicago, by weeks, over the 12 year period 1930–1941, rises from a low point of $6.80 in December to a peak of $8.82 in September, a rise of $2.02. The average price of 250–290 pound hogs behaves in a similar manner. The weighted average seasonal movement of the prices of packer and shipper purchases of hogs, excluding pigs, boars, stags, extremely rough sows, and cripples, by months, over the same period, is less than this. The range in this case is $1.21; this is a change of 14.4 percent. Over the 20 year period 1922–1941, the rise is the same amount in percentage terms. If the average prices received by farmers over the United States are used, the range is 20 percent.

It would probably be well to use a comparatively small seasonal change at first. Perhaps a change of $1.00 would be enough to start with. It is likely that farmers would react more strongly, in their marketing of hogs, to price changes published in advance than they would to price changes that were not known for sure until they had happened, and it would seem to be wise to try a seasonal change of $1 first.

There is also some possibility that a comparatively simple seasonal change—one with good sized plateaus or flat parts and only a small number of changes—would be preferable to a floor based directly on the average seasonal movement of 200–220 pound good to choice butcher hogs at Chicago over the period from 1930 to 1941, shown in Table 1 (with each change reduced to half the size shown, in order to keep the total seasonal change down to $1.00). This question is tied up with another question, as to whether seasonal changes in the hog price floors should be not used until after the descent to peace time price levels has been effected, in order not to complicate that descent too much. It constitutes an additional reason for not using a seasonal movement in the hog price floor until after the war.

### *Price Floors and Parity*

Present legislation concerning price floors may put the United States Department of Agriculture in a jam after the war. The law specifies that "whenever the Secretary of Agriculture finds it necessary to encourage the expansion of production of any non-basic

TABLE 1. AVERAGE PRICE OF 200–220 POUND GOOD TO CHOICE BUTCHER HOGS AT CHICAGO, BY WEEKS, 1930 TO 1941; AND SUGGESTED SEASONAL MOVEMENTS IN THE PRICE FLOOR

| Week | Average price of hogs, 1930–41 | Seasonal change in floor of $2.00 | Week | Average price of hogs, 1930–41 | Seasonal change in floor of $2.00 |
|---|---|---|---|---|---|
| 1 | $7.08 | $12.50 | 27 | $8.00 | $13.70 |
| 2 | 7.14 | 12.50 | 28 | 8.31 | 13.90 |
| 3 | 7.24 | 12.60 | 29 | 8.35 | 14.00 |
| 4 | 7.29 | 12.70 | 30 | 8.36 | 14.10 |
| 5 | 7.31 | 12.80 | 31 | 8.45 | 14.20 |
| 6 | 7.45 | 12.90 | 32 | 8.51 | 14.30 |
| 7 | 7.56 | 13.00 | 33 | 8.61 | 14.40 |
| 8 | 7.57 | 13.10 | 34 | 8.72 | 14.45 |
| 9 | 7.56 | 13.20 | 35 | 8.72 | 14.50 |
| 10 | 7.68 | 13.30 | 36 | 8.82 | 14.50 |
| 11 | 7.73 | 13.40 | 37 | 8.73 | 14.50 |
| 12 | 7.66 | 13.45 | 38 | 8.71 | 14.45 |
| 13 | 7.58 | 13.45 | 39 | 8.40 | 14.30 |
| 14 | 7.49 | 13.40 | 40 | 8.16 | 14.10 |
| 15 | 7.56 | 13.35 | 41 | 8.04 | 13.90 |
| 16 | 7.58 | 13.30 | 42 | 7.80 | 13.70 |
| 17 | 7.50 | 13.25 | 43 | 7.46 | 13.50 |
| 18 | 7.39 | 13.20 | 44 | 7.25 | 13.30 |
| 19 | 7.38 | 13.15 | 45 | 7.24 | 13.10 |
| 20 | 7.43 | 13.15 | 46 | 7.18 | 12.90 |
| 21 | 7.56 | 13.15 | 47 | 6.94 | 12.70 |
| 22 | 7.54 | 13.20 | 48 | 6.80 | 12.55 |
| 23 | 7.48 | 13.25 | 49 | 6.86 | 12.50 |
| 24 | 7.58 | 13.30 | 50 | 6.85 | 12.50 |
| 25 | 7.71 | 13.40 | 51 | 6.87 | 12.50 |
| 26 | 8.09 | 13.50 | 52 | 7.12 | 12.50 |

agricultural commodity" (hogs are legally defined as non-basic) he shall provide price floors for that purpose; and the minimum level for price floors is to be 90 percent of parity, "during the continuance of the present war and until the expiration of the two-year period beginning with the first day of January immediately following the date upon which the President by proclamation or the Congress by concurrent resolution declares that hostilities in the present war have terminated."[2]

That means either one of two things: (1) that the phrase about encouraging expansion will be interpreted as meaning that floors cannot be used at all after the need for expansion is past, in which case we will be no better off than we were after the last war, or (2) that the floors are to be continued at not less than 90 percent of

[2] Public Law 147—77th Congress, Chapter 270—1st Session, Sec. 4. (a), and Public Law 729—77th Congress, Chapter 578—2nd Session—H.R. 7565, p. 4, Sec. 9. (1).

parity for a period ranging from 2 to 3 years after the war, according to whether the war ends late or early in a calendar year.

Presumably the second alternative will be followed. If so, it involves a legislative problem of some difficulty. The new price floor for hogs, $12.50 at Chicago, is about $1.20 above the minimum legal level of 90 percent of parity.[3] The index of prices paid by the farmer, which governs parity, rose twelve points from September, 1942, to September, 1943—at the rate of one point per month. If the rise continues at that rate in the future, 90 percent of parity for hogs at Chicago in September, 1944, will be about $12.08. By the middle of March, 1945, two weeks before the floor expires, 90 percent of parity would be $12.47. The $12.50 floor would just barely get by.

A new floor would be announced in the fall of 1944 (perhaps in September, as in 1943, or in November, as in 1942). If the end of the war was in sight then, the new floor would need to be lower than the old; but if the old floor was only just high enough to get over the 90 percent-of-parity minimum, the new floor would have to be higher than the old, not lower. The ending of the war cannot be counted on to lower the index of prices paid by farmers (which governs parity) at once. The ending of the war probably would not immediately lower the index of prices paid by farmers. After the last war, the index continued to rise, from 174 in 1918 to 200 in 1919 and 205 in 1920. If the same sort of thing happens this time, then when it becomes necessary to lower the hog price floor a year or so after the war is over, it may be impossible to do so. This may turn out to be a pretty puzzle for lawyers, economists and legislators to figure out.

### *Relation Between Hog Price Floors and Corn Price Floors*

A final problem is this. If hog price floors were changed 5 or 10 cents a week, or even if they were changed twice a year, how would that fit in with changes in the price floor (loan) for corn? The loan rate for corn so far has been changed only once a year; if it remains fixed at 85 percent of parity until 2 or 3 years after the end of the war, as provided under present legislation, it will not change at all, except only as parity changes.

It is obvious that this situation—hog price floors that change

[3] Parity in September, 1943 was $12.00. Ninety percent of that parity is $10.80. The price at Chicago usually runs about 50 cents higher than the United States average farm price used in computing parity, so 90 percent of parity would be about $11.30 at Chicago.

frequently, and corn loan rates that remained fixed—is likely to cause trouble. Hog prices are only one of the two chief things that control hog production; corn prices are the other thing. It is the relation between the two—the familiar hog-corn price ratio—that mostly controls hog production. A program for hogs that controlled only the price of hogs would have erratic effects if it could not control corn prices as well. It would not be able to control the hog-corn price ratio. Therefore it would not be able to control the production of hogs; and therefore it would not be able to control hog prices after all.

It is evident that a price-control program for hogs cannot be effective unless it is able to control the price of corn as well as hogs. The program should provide for raising or lowering the price of corn, as well as hogs, in order to provide the hog-corn price ratio needed from time to time to induce the desired production of hogs. If hog and corn prices both are to be kept from breaking as severely after this war as they did after the previous war, the production of hogs and corn must not be left uncontrolled, or only erratically controlled. The way to handle hog and corn prices after the war is over is to announce hog price floors before breeding time at the level that, in relation to the price of corn, will induce the production of hogs that can be sold at that price floor level, in view of the prospective private plus governmental demand. This requires control over corn prices as well as hog prices.

If each price floor—the one for hogs, and the other for corn—is changed at the right time for each product, will the changes in the two floors fit in with each other?

The natural times to announce changes in the hog price floors are November and May. The natural time to announce changes in the corn price floors is January; there is no benefit to be gained by announcing changes in the corn price floors more than once a year, for corn is planted only at one time of year—in the spring. If however the new price floor for hogs were announced in November and the new corn price floor were not announced until the following January, during those two months (from November to January) the hog-corn price ratio would be based upon the new price floor for hogs but upon the old price floor for corn. These two months from November to January are the most important months of the year from the point of view of controlling hog production by the hog-corn price ratio. More sows are bred then, for the spring pig

crop, than during any other two months of the year. It is therefore essential that the hog-corn price ratio during those two months be based upon the new floor for corn as well as for hogs. This could be accomplished by announcing the new floor for corn, not in January but in the preceding November, at the same time that the new floor for hogs was announced. The new floor for hog prices would become effective the next October, 11 months after announcement, and remain in effect for 6 months. The new floor for corn prices would become effective at the same time, but would remain in effect for 12 months. Farmers then would know, before they bred their sows, what the prices of hogs and corn would be when the new pig crop began to eat corn in substantial quantities.

Apparently it would not be advisable to change the floor for corn prices twice a year, if the price floor for hogs is changed twice a year. A durable product like corn can be sold at any time during the season, whenever prices are most favorable. If a change in the loan rate during the season were announced in advance, farmers would sell the bulk of the crop at the highest point within the season. This would provoke various disturbances. Physical handling and storage facilities would be overtaxed at one time of the year and underutilized at another. The heavy receipts during the part of the season when loan rates were highest would have a bearish tendency upon corn prices; conversely, the scarcity of receipts during the rest of the season would have the opposite effect. It would seem necessary to stick to only one change in the loan rate for corn per year.

It may be advisable to have a seasonal pattern in the corn loan rate similar to the average seasonal pattern of prices before the Commodity Credit Corporation loans affected the price pattern. It is probable that the seasonal change in the corn loan rate could be considerably smaller than the average seasonal movement of corn prices in the past; a small change announced in advance would have more effect than the same change not announced in advance.

### *Relation Between Corn Price Floors and Other Floors*

If corn price floors (loan rates) were set in proper relation to hog price floors, the floors for other crops that compete with corn would need to be set in proper relation to the price floor for corn. The loan rate for soybeans, for example, would need to be set at the level in relation to corn loan rates that would expand or reduce the acreage

of soybeans relative to the acreage of corn (whichever was required by the changes in the demands for the two products). The loan rate for wheat would require similar adjustment, and so would the rates for other competing crops.

What this means is that the price floors for perishable products (which have to move fast) would become the basis for the price floors for the durable products as well.

Where does all this leave us?

It leaves us with necessarily complicated and difficult problems. Hogs and corn are only two illustrations. Forecasting the required changes in price floors for different farm products more than a year in advance is a hazardous undertaking. It would seem to be only the part of wisdom to set each floor 10 percent or so lower than the forecasted level of prices, as some protection against unforeseen events. Yet the pressure will be all in the opposite direction—upwards. Before the war, this upward pressure caused most of the loan rates to be set too high, even though the general price level was rising or stationary. After the war, when price levels will be declining, the upward pressure will be doubly strong. A certain amount of it might have beneficial effects; if the War Food Administration found itself in possession of a lot of surplus food, that might force more subsidized consumption by low income groups than would otherwise take place. But will agricultural groups be willing to stop at about that point? Will they have enough grasp of economics and enough breadth of vision to refrain from going farther, and shortly driving the price control programs on the rocks? Do we have to choose between abandoning price controls after this war as we did after the previous war, or going through another Farm Board type of catastrophe as we did after the last peace time boom? May we have to go back to the so-called free market after all, because we cannot handle agricultural price control programs?

Steering a course between the Scylla of doing nothing, on the one side, and the Charybdis of trying to do more than we can handle, on the other, is going to require a lot of skillful navigation; and the navigators will need support from the passengers and crew. The outcome will depend basically upon the economic literacy of the voting population. That puts it up to us.

# INTERNAL TRADE BARRIERS FOR MARGARINE

L. D. HOWELL
*Bureau of Agricultural Economics*

THE war emergency emphasizes the importance of the most economical utilization of our food resources in providing adequate diets for our armed forces, our civilian population and our Allies. Some restrictions on the production and distribution of essential foods hinder the war effort by increasing the difficulties of providing such diets. State and Federal legislation restricting the manufacture and sale of margarine is an outstanding example of an internal trade barrier that affects the utilization of our food resources during the war emergency. Margarine is used principally as a substitute for butter, particularly by low income families. With the per capita supply of butter for civilian consumption in 1943 about 20 percent below that in 1942 and about 25 percent below the average consumption during the 6 years 1935–39, restrictions on the available supplies of margarine become of increased importance.

## *Characteristics and Utilization of Margarine*

Margarine is a fatty product composed of about 80 percent animal or vegetable fats or oils, usually combined with skimmed milk as an emulsifying agent. In earlier years, the bulk of the margarine manufactured in the United States was made of animal fats or oils and coconut oil, but in more recent years cottonseed oil and soybean oil have been the principal materials used.[1] The proportion manufactured from animal fats and oils decreased from about two-thirds during the period 1913–15 to less than 6 percent in 1937 and then increased to about 10 percent in the early 1940's, whereas the proportion made of coconut oil increased from less than 1 percent during the period 1913–15 to about three-fourths in 1933 and then decreased to less than 10 percent in 1940 and to about 1 percent in 1942. The part made of cottonseed oil increased from about 9 percent in the early 1930's to more than one-half in 1937 and 1941 and amounted to about 48 percent in 1942 and that for soybean oil increased from less than 1 percent prior to 1935 to more than 38 percent in 1942.

So far as digestibility and energy-yielding values are concerned,

[1] Agricultural Statistics, 1942, U. S. Dept. of Agr., p. 205.

there is little difference between margarine and butter.[2] Butter usually is considered superior in taste, and in earlier years at least the vitamin content of butter was much greater than that for margarine, but in more recent years most of the margarine produced has been fortified with vitamin concentrates. Most of the butter produced in the United States contains anywhere from 5,000 to 20,000 international units of vitamin A per pound and from 50 to 500 international units of vitamin D per pound.[3] Regulations of the Food and Drug Administration, promulgated in the Federal Register, June 7, 1941, permit the addition to margarine of Vitamin A concentrates in such quantities that the finished product contains not less than 9,000 U.S. Pharmacopoeia Units per pound. Margarine acceptable to the council on foods of the American Medical Association as fortified in Vitamin A must contain at least 7,500 International Units of this vitamin per pound and be so labeled. Such margarine also contains Vitamin D, as both Vitamins A and D are present in the concentrates added.[4]

Reports of scientific studies suggest the possibility that nutrients other than vitamins contained in butter may make it superior in nutritive value to margarine made of vegetable oils.[5] If it is established that butter used in mixed diets is superior to margarine in nutritive value, such differences should be duly recognized. Differences in nutritive value of competing foods are the rule rather than the exception, of course, and such differences usually are not considered an adequate basis for discriminatory taxes and other restrictions on the production and sale of the less desirable products.

The amount of margarine used in the United States is small in comparison with the amounts of butter, lard, and other edible fats and oils used. During the 5-year period ended with 1941 the per capita utilization of these products averaged about 2.7 pounds for margarine, 17.0 pounds for butter, 12.6 pounds for lard, and 18.6 pounds for other edible fats and oils. The per capita utilization of these products varies considerably from year to year. The changes in utilization of margarine usually vary inversely with the corresponding changes for butter. During the 17-year period, 1925–41,

[2] Fats and Oils for Cooking and Table Use, U. S. Dept. of Agr. Leaflet No. 204 (1940). Margarine Takes the Hurdle, Consumers' Guide Separate No. 35. U. S. Dept. Agr., Dec. 1940.

[3] Council on Food and Nutrition. The Comparative Nutritional Value of Butter and Oleomargarine, *The Journal of the American Medical Association*. Vol. 119, No. 17, August 22, 1942. pp. 1425–27.

[4] Fats and Oils for Cooking and Table Use, *op. cit.*

[5] Council on Food and Nutrition, *op. cit.*

deviations from the average in annual amounts of margarine used, when related to similar deviations for butter, gave a correlation coefficient of 0.87. No very pronounced long-time trends are indicated for margarine, butter, and lard, but the utilization of compounds shows a very definite upward trend since the early 1920's.

Prices of margarine usually are substantially lower than those for butter and considerably higher than those for lard and other edible fats and oils. During the period 1925 to 1941, for example, margarine prices averaged 20.5 cents per pound, or about one-half those for butter. The average spread between prices of margarine and butter varied from 12.4 cents per pound in 1932 to 29.8 cents in 1928.

### *Restrictions on the Manufacture and Sale of Margarine*

#### *Regulations to Prevent Fraud*

During the early history of margarine in the United States adulterations were common and many unscrupulous dealers sold margarine for butter. By 1886 laws designed to prevent fraud, to safeguard public health, and to protect the dairy industry were enacted in 24 States. Of these 17 were regulative measures providing penalties for the sale of margarine as butter and 7 were prohibitory in character, designed to exclude the manufacture and sale of the commodity from within the enacting State.[6]

The legality of these regulative measures was tested in the courts, and the principle was established that a State, under its police powers to prevent fraud and to protect the public health, may prohibit the sale within its borders of margarine colored in imitation of butter.[7] But a State statute which prohibits the sale of all margarine, colored and uncolored, in original packages imported from other States, violates the commerce clause of the Constitution of the United States.[8]

The broader prohibitory regulations in the various States were revised to conform to the principles established by the courts by restricting their prohibitions to the manufacture and sale of margarine colored in imitation of butter. Twenty-nine States have such legislation in effect at the present time.[9]

---

[6] Katharine Snodgrass, Margarine As a Butter Substitute, Food Research Institute. Stanford University (1930).

[7] *Plumley v. Mass.* 155 U.S. 461.

[8] *Schollenberger v. Commonwealth of Pennsylvania*, 171 U.S. 1.

[9] Anne Dewees, State and Federal Legislation and Decisions Relating to Oleomargarine, U. S. Dept. Agr. Bur. Agr. Econ. Revised 1939 (Processed).

Other restrictions include State and Federal regulations requiring that packages containing margarine be conspicuously labeled, branded or marked so that dealers and consumers may know specifically what is purchased and used. Forty States require such labeling and most of them specify the size and kind of lettering which must be used. About 17 different sizes and types of lettering are required. Statutes in 34 States require that placards or signs be displayed in a conspicuous place as a means of notifying the public that margarine is sold or served.[10]

Regulations promulgated under the Federal Food, Drug, and Cosmetic Act, effective September 6, 1941, establish a definition and standard for margarine. These regulations require that margarine offered for sale be conspicuously labeled and handled so that consumers can readily tell it from butter. This labeling must contain a statement easily seen under customary conditions of purchasing, showing the kind of fat or oil used, the preservative used, if any, and whether artificial flavoring was added. With the Federal regulations in effect for interstate commerce, similar State regulations applicable to intrastate transactions would appear to supply an adequate legal basis for preventing deception and fraud and for protecting the public health.

*Excise Taxes and License Fees*

Federal and State excise taxes and license fees also restrict the manufacture and sale of margarine. Excise taxes varying from 5 to 15 cents per pound are imposed on the manufacture and sale of margarine in 19 States and license fees varying from $1 to $1,000 for the manufacture and from $1 to $500 for the sale of margarine are imposed in 17 States. The Federal Government levies a manufacturing tax of 10 cents per pound on all margarine colored in semblance of butter and $\frac{1}{4}$ of 1 cent per pound on all uncolored margarine. In addition the Federal Government places a license fee of $600 on manufacturers, $480 on wholesalers, and $48 on retailers of colored margarine. But if only the uncolored product is sold, the tax is $200 for wholesalers and $6 for retailers.

The validity of Federal and State margarine taxes have been well sustained as revenue measures by court decisions.[11] The Supreme

[10] Marketing Laws Unit, Bureau of Foreign Domestic and Commerce, U. S. Dept. of Commerce.

[11] *McCrory v. U. S.*, 195 U.S. 27 and *A. Magnano Co. v. Hamilton* 292 U.S. 42.

Court of the United States upheld a Washington excise tax of 15 cents per pound on all margarine sold within the State, despite the fact that the tax virtually prohibits the sale of margarine within the State.

The principles announced by the courts indicate that very sweeping relief from discriminatory taxes, license fees, and other restrictions on the manufacture and sale of margarine need not be expected from the courts. Any substantial relaxations of these restrictive measures would require legislative revisions and enactments. Any legislative measures of this kind which may be enacted should be based on a thorough knowledge of the relative amounts and distribution of the benefits and costs of such restrictions.

*Benefits and Costs of Restrictions on Margarine*

Restrictions on the manufacture and sale of margarine affect directly the prices, production, and consumption of margarine and indirectly the prices, production, and consumption of butter, lard, vegetable shortening, and other competing products. The amounts of the changes brought about as a result of such restrictions would be influenced considerably by the response of consumers and producers of these products to changes in their prices and by the elasticity of their substitution.

An excise tax of 10 cents per pound on margarine, for example, would tend to raise prices of margarine to consumers and, assuming increasing average costs per unit with further increases in the volume produced, to reduce prices to producers. Under freely competitive conditions, the combined amounts of these changes in prices would approximate the rate of the tax imposed. Advances in prices of margarine to consumers would tend to strengthen the demand for butter, lard, vegetable shortening, and other competing products and the consequent advances in prices of these products would, in turn, tend to strengthen the demand for margarine. The net effects of such a tax would be a reduction in supplies and an advance in prices of margarine. With the elasticity of the demand for margarine about unity or somewhat greater than unity, total consumer expenditures for margarine would remain about the same or be reduced somewhat,[12] but returns to margarine producers

[12] Information available, although it is not very complete, indicates that the elasticity of the demand for margarine is about unity or perhaps somewhat greater than unity.

would be reduced considerably. With an increase in demand for butter as a result of advances in prices of margarine, assuming increases in average cost per pound of producing butter with further expansion in production, prices, production and consumer expenditures for butter would tend to be increased.

Reductions in the demand for certain fats and oils (largely cottonseed and soybean) as a result of restrictions on the manufacture and sale of margarine would tend to increase the quantity of these products available for competition with lard and other fats and oils. A complete evaluation of all benefits and costs of such rstrictions on margarine would involve an analysis of data for lard, other fats and oils and possibly other competing products. But it is thought that the effects of such restrictions can be indicated fairly well by an analysis for margarine and butter.

*Effects on Consumers and Producers of Margarine*

Such effects of the tax on prices, production, expenditures, and incomes do not indicate very accurately the relative amounts and distribution of the net detriments or losses to consumers and producers of margarine. In addition to the higher prices that would have to be paid for the margarine purchased, as a result of the tax on margarine, consumers would be deprived of the opportunity of purchasing substantial quantities of margarine at the lower price level that would prevail in the absence of the tax. Assuming increases in average cost per unit with increases in volume produced, margarine producers, in addition to reductions in gross returns from the margarine sold as a result of the tax, would be deprived of the opportunity of selling substantial quantities of margarine at prices which in the absence of the tax would yield them substantial returns, a considerable proportion of which would be net profits. An appraisal of an excise tax on margarine, from the point of view of relative amounts and distribution of net profits and detriments, would require an evaluation of these additional costs or detriments to consumers and losses to producers.

Such evaluations were arrived at on the basis of analyses involving Marshall's method for indicating consumer's surplus[13] elaborated with indifference diagrams.[14] The results clearly indicate

---

[13] Marshall's Principles of Economics, 8th Ed. pp. 467 f and p. 842.

[14] J. R. Hicks, Value and Capital. pp. 38–41; M. F. W. Joseph, The Excess of Burden of Indirect Taxation, Review of Economic Studies, Vol. VI, No. 3, pp. 226–231; and George F. Stigler, The Theory of Competitive Price. pp. 81–82.

that, with any given schedules of demand for and supply of margarine (except for absolutely inelastic demands for and supplies of margarine and such demands and supplies are clearly beyond the range of the probable), the maximum gross revenues obtainable from an excise tax on margarine would be less than the additional costs or detriments to consumers plus any net losses to producers as a result of the tax. Such net social losses would be supplemented by the costs of administering the tax law and of collecting the revenues. They might be supplemented or offset in part by consequent changes in supplies and prices of alternative products and by any social benefits or detriments from the distribution of the tax burden and from the use of the revenues obtained.[15]

Reductions in the quantity of margarine produced as a result of the imposition of an excise tax might increase the quantity of labor and other forces available for the production of other commodities. Any increases in supplies and lowered prices for other products as a result of such shifts in productive forces would tend to reduce somewhat the net social losses indicated by a comparison of costs or detriments to consumers plus any losses to producers of margarine with revenues obtainable from the tax. But, under freely competitive conditions, the diversion of productive forces from the margarine to other industries by means of an excise tax on margarine would reduce the productive contribution of these forces toward improving the standard of living, particularly of low income families.

In addition to the fact that additional costs or detriments to consumers plus any losses to producers as a result of an excise tax on margarine would be greater than maximum gross revenues obtainable from the tax, the burdens of such a tax fall relatively heaviest on families with low incomes. The best information available indicates that the proportion of the families using margarine and also the average per capita consumption of the product are greater for low than for the higher income families. Then, the proportion of the family income used up by advances in prices of margarine, attributable to the tax, is much greater for families with low incomes than for families with medium and higher incomes.

[15] It is conceivable that if the revenues from the tax were used to subsidize the production of commodities that are characterized by substantial decreases in average cost of production per unit with increase in the volume produced, the consequent increases in consumers' surplus would exceed the subsidies enough to offset the net social losses that otherwise would be sustained as a result of the tax (Marshall's Principles of Economics, 8th Ed. p. 469). But even in such cases the results would be a tax on one group of consumers for the benefit of another, unless these other products were consumed by the bearers of the tax on margarine.

State license fees required of manufacturers, wholesalers, retailers, restaurants, hotels, and other serving margarine, by increasing the necessary merchandising margins, tend to raise prices to consumers and reduce incomes to producers. These changes tend to reduce the quantity of margarine produced and consumed and, as already indicated for excise taxes, the increased costs to consumers plus losses to producers exceed the revenues obtained from the license fees. The burdens fall relatively heaviest on consumers of margarine, particularly the lower-income families.

Results of the analysis presented showing the effects of an excise tax on margarine were based on the assumption of free competition and on the further assumption that the full amount of the tax imposed would be reflected in changes in the spread between prices for margarine paid by consumers and those received by producers. To the extent that the tax would be absorbed by middlemen or by producers under monopoly control, the costs or detriments to consumers would be correspondingly less than under free competition and revenues obtainable from the tax would be increased. But in any event the additional costs or detriments to consumers plus losses to producers, including middlemen, would exceed maximum revenues obtainable from the tax.

*Taxes on Margarine as a Protection for the Dairy Industry*

As already indicated, margarine competes to some extent with butter as well as with lard and other edible fats and oils. Families with the higher incomes usually continue to use butter regardless of differences in prices, but those with extremely low incomes use larger proportions of the cheaper fats and oils and are not able to buy much butter even when margarine is not available. Thus the substitution of butter for margarine in response to changes in relative prices apparently is confined mainly to families whose income are large enough to permit the use of some butter but small enough to require rather strict economy in the purchase of food.

Advances in prices of margarine as a result of excise taxes would encourage shifts in consumption from margarine to butter, lard, and other fats and oils. Such shifts made by the lowest income families probably would be largely from margarine to lard and other low priced fats and oils. A larger proportion of the shifts made by the higher income families probably would be reflected in increases in consumption of butter, but butter prices usually are about twice

as high as those for margarine and the demand for margarine probably is somewhat more elastic than the demand for butter. Consequently increases in consumption of butter by those who shift from margarine would likely be much less than their reductions in consumption of margarine.

An excise tax of 10 cents per pound on margarine, for example, would tend to raise prices of butter and increase the quantity of butter produced and consumed. But such changes do not show very accurately the relative amounts and distribution of the net benefits and costs of such a tax to butter producers and consumers. An evaluation of such benefits and costs by means of Marshall's[16] method for measuring consumer's surplus elaborated with indifference diagrams[17] clearly indicates that, with any given schedules of demand for and supply of butter (except absolutely inelastic ones and such are clearly beyond the range of the probable) the additional costs or detriments to consumers would exceed the benefits to butter producers. Such excess of costs or detriments over benefits represents a net social loss which tends to reduce the average standard of living for the population as a whole.

Furthermore, the additional costs or detriments as a result of the tax fall relatively heaviest on families with low incomes. The average per capita consumption of butter usually is somewhat greater for the higher than for the lower income families, but the differences in quantity consumed are proportionally much less than the differences in income. Consequently, the proportion of the family income used up in the purchase of butter averages about twice as great for families with annual incomes of less than $1,500 as that for families with annual incomes of $2,000 to $5,000.[18] Then, the costs of protecting the dairy industry by strengthening butter prices through discriminatory taxes on margarine, instead of being graduated on the basis of ability to pay, are regressive in that the proportion of the annual income used up in paying these costs is highest for the lower income families.

In evaluating the relative benefits and costs of restrictions on margarine over a period of years, the probable effects of such restrictions on the supply schedules for butter and margarine should be taken into account. It may be that the higher prices for butter

[16] Marshall, *op. cit.*
[17] Hicks, *op. cit.*
[18] Consumer Purchaser Study—Family Food Consumption and Dietary Levels U. S. Dept. of Agri. Misc. Pub. No. 405 (1941).

as a result of restrictions on margarine would induce the establishment of the dairy industry on an enlarged scale so that eventually the quantity of butter and other dairy products made available to the public at any given price level would be greater than it would have been in the absence of such restrictions. On the other hand, the removal of all restrictions on margarine might eventually shift the supply schedule for margarine to the right, to the benefit of consumers. Information available is not adequate for determinng whether the benefits from any such shifts in the supply schedule for butter as a result of restrictions on margarine would be greater or less than the benefits from any shifts in the supply schedule for margarine as a result of removing the restrictions.

Whether the benefits to butter producers from such restrictions are important enough to justify the costs to consumers and detriments to other groups of producers would appear to depend to a considerable extent upon the nature and importance of the dairy industry and its relative needs for special protection and assistance, on the one hand, and upon the incidence and burdensomeness of the costs of such protection and assistance on the other. Discriminatory taxes and other restrictions on the manufacture and sale of margarine to protect the dairy industry curtail outlets for cottonseed, soybean and other oils used in the manufacture of margarine, to the detriment of producers of these products. Cottonseed oil alone made up 48 percent and cottonseed and soybean oils together made up more than three-fourths of the total fats and oils used in the manufacture of margarine in the United States in 1942, but only about 12 percent of the supply of cottonseed oil and about 17 percent of the soybean oil were used in the manufacture of margarine.[19] The margarine made from cottonseed oil in 1942 amounted to about 8 percent of the quantity and to about 4 percent of the value of the butter consumed in the United States during that year. The corresponding proportions for margarine made of soybean oil were about 6 percent and 3 percent, respectively.

These data clearly indicate that restrictions on margarine production would limit or shift the outlets for cottonseed and soybean oils by considerably larger proportions than they would expand the outlets for butter, even if all the consequent reductions in consumption of margarine were replaced by the use of butter; and this is not likely. But total returns from butterfat to dairy farmers in some

[19] Agricultural Statistics, 1942, U. S. Dept. of Agri. pp. 170, 201, 205, and 206.

States may be relatively much more important than returns from cottonseed oil are to cotton farmers. Furthermore, some cotton farmers also produce butterfat for sale and would share any benefits to butter producers from restrictions on the manufacture and sale of margarine.

Some indications of the relative needs of dairy farmers for special assistance and of the relative ability of cotton farmers, for example, to contribute to such needs may be obtained from information on average net incomes of dairy and cotton farmers in recent years. Information assembled for typical family-operated farms during the 5-year period, 1938–42, shows that net farm income for typical family-operated dairy farms in Wisconsin, for example, averaged more than four times as great as that for typical 2-mule cotton farms in Georgia, more than three times as great as that for typical 2-mule cotton farms in the Mississippi Delta, and more than 3 times as great as that for typical family-operated cotton farms in the black waxy land in Texas.[20] Net farm incomes for typical family-operated dairy farms in New York and for typical family-operated hog-dairy farms in the Corn Belt, average somewhat less than those for typical family-operated dairy farms in Wisconsin. But during the 5 years, 1938–42, net farm income for typical family-operated dairy farms in New York and typical family-operated hog-dairy farms in the Corn Belt averaged more than 3 times as great as that for typical 2-mule cotton farms in Georgia, and more than 2 times as great as that for typical 2-mule cotton farms in the Mississippi Delta and for typical family-operated cotton farms in the black waxy land in Texas.

Such differences in net farm income might be taken into account in deciding whether the relative needs of dairy farmers, as compared with cotton farmers, for example, for special protection and assistance warrant discriminatory taxes and other restrictions on the manufacture and sale of margarine to protect dairy farmers at the expense of cotton farmers. Such discriminatory measures incite ill-feeling and retaliation on the part of the groups discriminated against. Some indications of the reactions of such groups may be obtained from protests and threats of reprisal made by cotton-growing states immediately following the passage of the Wisconsin

[20] Bureau of Agricultural Economics. Net farm income is the amount of money received by the operator and unpaid members of the family for services rendered on the farm during the calendar year and for the farmer's own investment, but not including value of commodities used for human consumption on farms where grown.

margarine tax of 15 cents per pound in 1935. In addition to public protests and threats of reprisal made by State Governors and State Commissioners of agriculture, the Mid-South Cotton Growers Association, the Mississippi Wholesale Grocers Association, the Tennessee Federation of Labor and other agencies issued vigorous protests.[21]

If dairy products are considered so important in human diets that special protection and assistance are to be given to the dairy industry, the benefits to producers per unit of cost would be much greater from direct subsidies to dairy farmers paid from general revenues than from indirect subsidies from discriminatory taxes and other restrictions on the manufacture and sale of margarine. Furthermore, the costs of indirect subsidies through taxes on margarine are regressive in that they take a larger proportion of the annual income of the lower than of the higher income families; whereas the costs of direct subsidies would be distributed more nearly on the basis of ability to pay, in accordance with the prevailing tax policy. The use of direct instead of indirect subsidies would reduce or remove the detriment imposed on cotton farmers whose incomes, as already indicated, are much lower than those of dairy farmers, and reduce the difficulties low income families have in securing an adequate diet.

Direct subsidies to the dairy industry paid from public funds might be more vulnerable to political attack than indirect subsidies through discriminatory taxes and other restrictions on the manufacture and sale of margarine. The amounts of funds used for direct subsidies could be determined more accurately than the costs or detriments of indirect subsidies for presentation to the public for condemnation or approval. Furthermore, direct subsidies would require appropriations of public funds which at times might be difficult to obtain; whereas indirect subsidies may be obtained by measures ostensibly designed to prevent fraud, to protect the public health, and to raise revenues. But the relative social and economic advantages and disadvantages of direct in comparison with indirect subsidies should also be taken into account in formulating policies.

### *Summary and Conclusions*

Federal and State legislation restricting the manufacture and

[21] George R. Taylor, Edgar L. Burtis, and Frederick V. Waugh, Barriers to Internal Trade in Farm Products. U. S. Dept. of Agri. A special Report. 104 pp., illus. (1939).

sale of margarine is an outstanding example of an internal trade barrier that affects the wartime utilization of the food resources in the United States. Margarine is used principally as a substitute for butter, particularly by low-income families. With the per capita supply of butter for civilian consumption in 1943 about 25 percent below the average consumption during the 6 years 1935–39, available supplies of margarine become of increased importance.

Many of the Federal and State laws and regulations, ostensibly to prevent fraud and to safeguard the public health, but actually designed to protect the dairy industry, are used widely to restrict the manufacture and sale of margarine. The legality of these restrictions has been tested in the courts and the principle well established that a State, under its police powers, may prohibit the sale within its borders of margarine colored in imitation of butter.

Federal and State excise taxes and license fees are also widely used to restrict the manufacture and sale of margarine. The validity of such taxes and license fees has been well sustained as revenue measures by court decisions. The principles announced by the courts indicate that very sweeping relief from discriminatory taxes, license fees, and other restrictions on the manufacture and sale of margarine need not be expected from the courts.

Any substantial relaxation of Federal and State restrictions on the manufacture and sale of margarine apparently would require legislative enactments. Any legislative measures of this nature which might be enacted should be based on a thorough knowledge of the relative amounts and distribution of the net benefits and costs of such restrictions. The results presented in this paper clearly indicate that:

1. Restrictions on the manufacture and sale of margarine tend to raise prices of margarine and butter to the disadvantage of consumers of these products and to the advantage of butter producers.
2. Maximum revenues obtainable from excise taxes and license fees on the manufacture and sale of margarine are less than the consequent costs or detriments to consumers plus losses to producers of margarine.
3. Increases in net income to butter producers from higher prices of butter as a result of restrictions on the manufacture and sale of margarine are less than the consequent additional costs or detriment to consumers of butter. Any shifts in the

supply schedule for butter as a result of such restrictions would tend to reduce butter prices, to the advantage of consumers and to the detriment of producers.

4. Additional costs to margarine and butter consumers of protecting the dairy industry through discriminatory taxes and other restrictions on margarine, instead of being graduated on the basis of ability to pay, are regressive in that the proportion of the annual income used up in paying these additional costs is highest for the lower income families.
5. Net farm incomes for typical family-operated dairy farms average much greater than those for typical family-operated cotton farms. Such differences might be taken into account in deciding whether the relative needs of dairy farmers, as compared with cotton farmers, for special assistance warrant discriminatory taxes and other restrictions on the manufacture and sale of margarine to protect the dairy farmer at the expense of the cotton farmer.
6. Even if dairy products should be considered so important in human diets that special protection and assistance are to be given the dairy industry, direct subsidies to dairy farmers paid from general revenues would give them greater benefits per unit of cost; the costs would be distributed more nearly on the basis of ability to pay; and the detriments to cotton farmers and other low-income producers would be less than from indirect subsidies through restrictions on the manufacture and sale of margarine.

In light of these facts and the war emergency, it is apparent that the removal of all Federal and State excise taxes, license fees, and other restrictions on the manufacture and sale of margarine not needed to prevent fraud and to protect the public health (in the absence of any substantial shifts in the supply schedule for dairy products as a result of such changes) would contribute toward an improved standard of living for the population as a whole and particularly for low-income families. With Federal regulations under the Federal Food, Drug and Cosmetics Act in effect for interstate transactions, similar State regulations applicable to intrastate transactions would appear to supply an adequate legal basis for preventing deception and fraud and for protecting the public health.

# GOVERNMENT CONTROL AFTER THE WAR*

ROBERT A. BRADY
*University of California*

PROPHECY for an economist—particularly on a subject such as this—is both dangerous and thankless. For many reasons it might well behoove the man, whose science is "dismal" nowadays primarily because nobody really wants him around, to heed the advice of the Restoration playwright, Congreve, to "shut his mouth" and "chew the Cud of Understanding" for a while instead. Nor is the matter helped much by speaking in terms of "extrapolation" from past trends. Polysyllables are suspect even when they imply nothing but learning, and learning—especially in the possession of an economist—still carries the incubus of a black art. The critic may be stunned to silence for the nonce, only to suspect that prophecy has been smuggled in the back door by a near transparent ruse. At the very best, "extrapolation" involves criteria of relevance, importance, and trend; these require judgment and thought, and both the latter are feared by those in a position to insist with some show of authority that all conclusions are wicked except in those which are congruent with their own. Like Mrs. Nussbaum in Allen's Alley, the first response, before the words are out of your mouth, is apt to be a long and skeptical "No-o-o-!"

Beginning, however, with "No-o-o-!" there may be some discoverable area of common understanding. Clearly, for the past seventy-five years the hand of the government has become visible in an ever wider range of economic affairs. One is hard put to find any sector of economic life in any major industrial country in which this general tendency is on the ebb and not the flow. Since the celebrated "blossoming time of laissez faire" during the 'sixties and 'seventies of the past century, the current has run, steadily and well-nigh universally, with cumulative force and volume in this direction. Is there any reason for believing that we will see a reversal, or even a slowing down of this movement, or a change in the importance of its position in maintaining prosperity for either theory or practice after the war? Or, are we apt, on present showing at least, to see a still further interlacing between economic institutions and political authority?

* Paper read at the Annual Meeting of the Western Farm Economics Association, Berkeley, California, June 24–26, 1943.

This last question, I believe, must be answered in the affirmative, and for a number of reasons. Let us consider a few of the more important causes a bit farther.

### *1. Few, if Any, Really Believe in Laissez Faire*

Paging through the literature, one is struck by the apparent fact that nobody any longer really believes that our modern complex economic system can be made smoothly to function or that prosperity can be enhanced by mere return to laissez faire. This is true even of the people who talk most about it, including the more ardent proponents of "rugged individualism" and "free enterprise." The man who would put "two chickens in every pot" by praise of the first, fathered the first approximation to a National Recovery Administration which would have, willy-nilly, put "two bureaucrats in every office" where only one was found before. "Free enterprise" is not an old, but a new expression. It is a contraction of "free competition" and "private enterprise" and can only mean, as I shall point out in a few moments, that our entrepreneurial Mohammed has chosen already to move to the political mountain.

Certainly, organized labor does not believe its welfare can be promoted by any more laissez faire. On the contrary, the more highly organized and selfconscious labor becomes the greater its insistence upon expansion of governmental control. Collective bargaining is not a substitute for government interference in labor relations, but the beginning point for steadily increasing pressure for an ever greater extension of public authority. Laws relating to arbitration, conciliation, wages and hours, regulation of the conditions of work, control over the labor of women and children, and the entire range of social security legislation have paralleled the rise of organized labor. The bulk of this legislation has had the approval of labor; most of it has secured the ardent support of its pressure politics. Nor has its promotion of legislation ceased with mere protection and promotion of its own group interests.

Certainly the business men do not expect to get along with any diminution in the strength of the public hand or the amount of governmental hand-out. Many of them appear to favor a return to laissez faire, but only in those areas where legislation has been unfavorable to their specific interests. "The animosity of German capitalism against the state," wrote Professor Bonn in 1931, "does not

rest upon fundamental theoretical foundations, but upon purely opportunistic considerations. It is opposed to the state when state control is in the hands of a political majority whose permanent good-will it doubts. German capitalism, which would like to be freed of the power of the state, and which seeks to push back state intervention as far as possible, is constructed exclusively upon the most thorough intervention of the state." This generalization will hold not only for German business, but for British and American business as well.

Not even the celebrated principle of "self-government in business" runs counter to this trend. The fullest expression of that principle in American business to date was the National Recovery Administration, and, as is now perfectly clear, National Recovery Administration involved a process of wholesale cartelization of American business which would not only have banished "free competition," but which also would confessedly have been wholly unworkable without the consistent intercession of the regulatory and coordinative functions of the state. National Recovery Administration was opposed by many business interests, not because of this fact, but because of the existence of Article 7a and the fact that administration lay in the hands of a New Deal officialdom which it definitely did not trust. Since National Recovery Administration there has been a wave of national and state legislation, sponsored and lobbied through by powerful business interests, which has written onto the statute books laws that are in line with the spirit and intent of the original Johnson-Harriman version of National Recovery Administration.

These laws—Robinson-Patman, Miller-Tydings, resale price maintenance, fair trade practice, etc.—have covered the United States with a thick network of business sponsored government controls. As early as 1936 the Institute of Distribution was able to argue that such laws had brought back about two-thirds of National Recovery Administration. The movement has lost none of its momentum since that date. But even this is only an extension of the growing reliance by business upon government largesse which, tracing back to the famous Bismarck Tariff of 1879, has led business throughout the world to demand more and more tariff protection, more subventions and subsidies, more control over "cut-throat competition," more aid in the consolidation of interests at home and abroad. The London Economist, observing a

similar trend in the classical land of laissez faire, speaks somewhat mournfully of "Britain's feudalistic system of cartel controls."

Few of the economists hope for general prosperity by return to laissez faire. In that branch of economic inquiry most apt to favor the tried and true anachronisms, "economic theory," the dominant writings are those centered around "monopolistic competition," "imperfect competition" and the various proposals of Lord Keynes and Professor Alvin Hansen. What these writers sponsor lays an ever heavier burden on the shoulders of government—though frequently with benefit of such dour qualifications that government appears less the goddess of Harvest and more the *mater doloroso*. As spokesman for the new economics, Keynes has written in his "The End of Laissez Faire" an epitaph for his own beloved Manchestrianism; few economists, here or abroad, tarried at the bier or wept at the grave.

As for the government, it is not a thing apart. We have known since Plato that government is inseparable from the people who sit at the helm, and since Machiavelli that it moves in the direction of those interests in a position to command the necessary effective power. Government is not, as some ingenuously believe, an independent agency which serves as impartial judge—swooping down from an austerely correct seat of judgment to decide fairly between contestants on the field of battle. It has no "independent mind." It may be a product of compromises, but it is the forces behind the compromises that dictate the nature of its judgments.

Consider the current paradox: little as well as big business opposes the New Deal more bitterly than any other not because the "liberals" who still have a dwindling little to say in Washington favor regulation, but only because they favor that type of regulation which restrains monopoly restraints. Monopoly restraints lead to efforts by the monopolists to place legislation on the statute books which make the path of monopoly easier, and which helps to consolidate such positions as have already been won. The "liberals" oppose this, and in opposing not only face the opposition of the monopoly groupings which they are attempting to hold in check, but also the little business men they are trying to protect. And they meet the complaints of the little business men by helping them to federate so as to become big, and, becoming big, proceed to favor legislation to help them consolidate their newly won positions and storm the next strategic height. Where, for example,

would the Associated Farmers and the Farm Bureau Federation have been without the various Marketing Agreements sponsored by the New Deal Agricultural Adjustment Administration program? Can anyone imagine certain highly placed Washington "liberals" frowning upon such things as the Desmond or the Young Acts? Is any one prepared to prophesy a sudden turning away by the farmers of California from their marketing and prorate agreements?

Are little businessmen and the "liberals" confused? Perhaps, but maybe they too have merely found that all roads lead to the new economic Rome. Their great white hope in these matters has turned out to be not a dragon-slaying Saint George, but little more than an overspent Don Quixote who has long since grown weary of the fruitless jousting. Thurman Arnold, most ardent trustbuster since the days of "Teddy and his big stick," has evolved three criteria for judging combinations where the government will not prosecute: (1) where combinations lead to increased efficiency; (2) where combinations promote "more orderly marketing"; and (3) where the government faces the problem of the "scrambled egg"—that is, where the gain from restoring a mixed situation to competition will create a disturbance which is not worth the price. Since these dicta were laid down, Mr. Arnold has retired to the comparative quiet of the judicial groves, and even his pallid consent decrees have been quietly interred in what may well prove to be their final resting place. Imagine what could not be combined under one or another of Mr. Arnold's dicta! Imagine further what this well-nigh total abdication of antitrust procedure will mean in terms of demand for new legislation by the new anti-competitive fledglings as they leave the incubator of war economy, and who already have learned to prefer for spouse the heavy-yielding monopolies to a barren laissez faire.

### *2. The Influence of Changing Technology Compels More and More Government Intervention*

Changes in industrial technology in recent years are basically of an "integrative" character. In all the so-called "natural monopolies" every new step has emphasized the meshlike, or network feature. A railroad, a highway, an internal and coastwide waterways, an airplane system tends to be coextensive with the area of reference, and the area of reference tends to become nation-wide

if not continental or world-wide. Here, as with the communication services—telephone and telegraph, radio and postal services—and with local or regional power, gas, water, sewage, and irrigation systems, the rule is not competition, but monopoly; not duplication and overlapping but centralization and unification; not so-called "free enterprise," but outright government ownership, "mixed enterprise" or even closer and more stringent governmental regulation. It seems almost certain that these services will gradually be taken over by government—where such has not already happened—here as they have been abroad.

In these cases the nature of the developing technology is such that there is virtually no alternative to unified and—within the geography of reference—all inclusive development. Much the same holds for several other fields as well. Power and river development have been mentioned. Connected with both is the concept—now winning ground all over the world—of unified watershed development such as that of the Tennessee Valley Authority, the Arkansas Valley Authority, the Central Valleys and the Columbia River projects. These are but the beginning; we can expect to see similar projects in every major watershed area within the United States in the first few years following the war. The advantages of unified development are so huge and so obvious on the face of things, that few will oppose them, and it is inconceivable that the peoples affected within any given area will consent to anything less than most rigorous and close government control, if not outright governmental ownership and operations, of at least the central and pivotal projects. It is highly doubtful whether organized business will seriously oppose the trend in general or for long; here and there, perhaps, but these are bound to be exceptions to the rule. This has been the experience of Tennessee Valley Authority, the Central Electricity Board in England, and of most similar projects here and elsewhere.

There are many similar developments in technology which run to a like effect. In connection with the aforementioned watershed projects, it is interesting to note that the ideal power combination pools water with steam generated current, and there is no case to be made—on either an enginering or a cost-accounting basis—for separation between regional-wide transmission grids and the steam and water power plants that feed it on the one end, and the distribution networks which it supplies on the other. Most of these

grid projects call for the utilization of water supply for the purpose of providing adequate channel for river and canal transportation, or for irrigation, municipal supply, or similar allied purposes. These functions can scarcely be separated from the main trunk of power development, and will doubtless be managed more regularly from the same offices.

Somewhat the same, though less rigorously perhaps, holds for control over crop, grass, and forest coverage on the watersheds. At least negative control—that is to say, the power to require that certain types of crops must not be grown and that certain percentages of forest coverage must not be disturbed—is surely on the cards. Without such control the danger of soil erosion will not only be continuously there—and public concern over rank wastage of such important natural resources is greatly in the ascendant—but also the danger of silting up behind dams, of having water turbines cut to pieces, and of depriving the dams of their power both to store water and to perform the other functions for which they were originally constructed.

In many other industries technological developments of a like character are exercising pressure for public intercession in a similar fashion. Two other illustrations must suffice. It is now recognizably true that both the nature of the subject matter and the costs of maintaining industrial laboratories are such as to make possible in modern times the "walling off" or the sequestration of large bodies of technologically significant data with much the same effect upon industrial change as that had by way of which the secret of making the pigeon-blood vases of the Japanese and the knowledge of glass coloring for the medieval cathedrals became exclusive family or craft possessions. The importance for industrial change of the converse, pooling of scientific and technological information on at least a nation-wide basis, is recognized by all in time of war. Thus the Kilgore bill for the setting up of an "Office of Technological Mobilization" is merely an American adaptation of the German "Kaiser Wilhelm Gesellschaft," or the machinery under the control of the Russian "Academy of Science," or the new Japanese central rationalization bureau. But the peace-time implications of the same for heightened levels of production—for the opening up of new industries, for entrance of new firms, for small business, for rates of depletion of key natural resources, for rates of depreciation and obsolescence, for the trend towards complete automatization

with its heightened emphasis upon operation to capacity limits—are too obvious to require elaboration. The Temporary National Economic Committee reports have dealt with this subject at some length. It is well-nigh certain that the public interest in what Spengler calls the "free roving intelligence" will continue ever more insistently to provide means for freeing technologically useful research from the Balkanization and control for private purposes which seems now to be in process of becoming the rule rather than the exception.

A second example is found in the standards movement. It is not necessary to explain here the reasons why it is true that this movement does not mean technical regimentation, but on the contrary, the taking of an infinity of small steps which cumulate to free more and more branches of industrial technology from an undergrowth of pointless variety and for the fullest possible realization of the possibilities of mass output and controlled product variation. Suffice it to say here only that this movement, which stems back in this country to the first World War, is one which calls for action on an industry-wide, nation-wide, and, to an increasing extent, world-wide basis, and that the benefactions to the public which flow from its application are so huge and so clear-cut that governments are being for all practical purposes forced to take an ever more active and vigorous hand in its promotion. The rapidly spread-eagling National Bureau of Standards is a mere by-product of this trend. The recent squabble over Office of Price Administration endorsement of grade labeling for canned goods and rayon hosiery offers minor examples of the enormous public interest at stake.

Without going further into the subject, I wish to point out one still more far-reaching implication of the standards movement—an implication which there is not time to develop properly here, but which may be mentioned for its bearing upon the subject at hand. That is, that as the standards movement is developed, so likewise are the connected systems of interchangeable parts, pre-fabrication and assembly improved and streamlined. In a society where these factors govern to a very considerable extent not only the physical productivity, size, location and grouping of industrial plants, but also such things as the possibility of breaking into business at all and the degree of monopoly power exercised by the insiders, the hand of the government is bound to appear under

circumstances where it is almost certain that nearly every interest group within each field will find itself compelled to insist that the government must accept, ever more clearly, a guiding role.

### *3. This is an Organized World, and in Such a World, Economic Power is Political Power; the Possession of Private Political Power Compels Government to Take Over Central Policy Guidance*

I hope I do not have to discuss the substance of the first half of this heading, but only its implications. There has been some tendency to deny the substance by reference to it as a "Marxian" thesis. It is, of course, nothing of the sort. It antedates Marx by some thousands of years. The famous Licinian law and the reforms of the brothers Gracchi in the ancient world took the point for granted. So also did Plato, Machiavelli, Frederick William the First who founded modern Prussia, the kings of France during the Hundred Years War, the Czars who humbled the boyards, and the first Chief Justice of the American Supreme Court. It is the thesis of Charles Beard in his well-known "Economic Interpretations of the Constitution of the United States," and it is the certain knowledge of every lobbyist who, with telegrams or other well known techniques of persuasion, coerces Congress with votes and withdrawal of campaign funds or influences the hesitant—as a whimsical friend of mine has put the matter so neatly—with "two cases of Scotch and a couple of blondes." In any case, it requires the contacts, the backing, and the wherewithal.

Returning, then, to the implications, let me note first the obvious fact that the habit of organizing is nothing new for Americans. It is an old national custom. De Tocqueville, speaking of his travels in America during the 1830's, wrote, "Americans of all ages, all conditions, and all dispositions, constantly form associations. They have not only commercial and manufacturing companies, in which all take part, but associations of a thousand kinds—religious, moral, serious, futile, extensive, or restricted, enormous or diminutive. The Americans make associations to give entertainments, to found establishments for education, to build inns, to construct churches, to diffuse books, to send missionaries to the antipodes; and in this manner they found hospitals, prisons, and schools. If it be proposed to advance some truth, or to foster some feeling by encouragement of a great example, they form a society." This did

not mean the arrogation to such societies of governmental authority. In fact, de Tocqueville sees these as an alternative to government power, for he adds, "Wherever, at the head of some new undertaking, you see the government in France, or a man of rank in England, in the United States you will be sure to find an association."

But, beginning somewhere around the period following the great depression of 1873, new types of organizations and societies began to appear both here and abroad. A considerable number of the older associations began to be transmuted—much as are geological strata under appropriate circumstances by a process known as "pseudomorphosis"—to become something quite different from their original selves. The more spectacular of these in the business world are those compact consolidations to which were soon given the name "trusts." The less spectacular, but in the long run perhaps more important, have been known as cartels, trade associations, trade unions, and farmers' federations. Sooner or later, by well-known steps which we need not retrace here, these bodies began to federate amongst themselves and centralize their activities on a nation-wide or world-wide basis, and as they did so, to mass their influence and power to achieve legislative as well as other ends. By common consent, government could not resign in the face of these pressures impinging on it from every angle without dissolving its sovereign authority into the political nothingness which characterized the imperial power in the early middle ages. But more than that, under these pressures the government becomes less uniquely "itself"—less of a self-acting and independent agency—and more the product of what the physicists would term a "parallelogram of forces." All the organized pressure groups have come, both here and abroad, to recognize that relative advantage funnels ever more clearly through the machinery of state, and of necessity accrue to the interest which is able to mass most readily and most strategically the power to influence, if not directly to coerce, government.

No part of this well-nigh universally accepted scheme of things is reconcilable with the maintenance of national prosperity by adhering to the propositions of laissez faire. On the contrary, it is to that time-honored institution as night is to day; its procedural aim is the antipode; its tenets the antitheses. And, on present showing, there seems not the slightest chance that any single pressure group will cease either its massing of power, or its methods of finding expression for its influence through the machinery of state.

Competition and laissez faire are not the same thing, but they are related to each other in such a way that monopoly is irreconcilable with a non-interventionist state. The evidence is overwhelming; it cannot be gainsaid by resort to innuendo or reference to the logic of history. Such a book as Burns' "Decline of Competition" should convince the last doubting Thomas. To be true, Burns left off where he might have begun to cope with this question. Nevertheless, his argument goes to show that just as every attempt at price control leads to more price control, and sooner or later to control over production, market allocations, and other basic policy issues—which accords with the history of all the leading cartels—so likewise at each step does the public interest demand that the state interfere. The penalty for non-interference becomes, under these circumstances, not only the dissolution of the power of the state, but also unrestrained rule within the economic sphere of the strongest to the general disadvantage of the welfare of society as a whole. The government cannot appease them by throwing the baby to the wolves, as did the peasant in the old Russian folk yarn. Not only will these politically omniverous groups eat the baby and then catch up with and devour the frightened parents too; they will also fall to fighting amongst themselves. Only the strongest will emerge by dint of brute strength; the rest of the pack will follow the leader or be devoured in turn. Clearly, the alternatives here are not laissez faire or government regulation, but popularly responsible government control or totalitarianism. The post-war world is bound to show us that we too have reached the great divide; if we keep democracy we will be compelled to leave laissez faire almost wholly aside. But even if democracy is lost, it is equally true that there is no future hope for that Smithian state of the blessed. The "free enterprisers," the Committee for Economic Development to the contrary notwithstanding, will see to that.

### *4. Where and How Will the Lines be Drawn?*

This question need not be answered by sheer guesswork. On the assumption that we will come out of the war with a strongly entrenched belief in democratic institutions at home, and with a set of distinctly non-imperialist policies to govern our actions abroad—both assumptions are, of course, certainly open to question—I believe that the following are apt to determine the line between distinctly public and more or less distinctly private activity. For sake of brevity, I am summarizing these in outline form:

1. *Government ownership:* For one or more reasons given above, or for other reasons which may not appear obvious at first, it seems practically certain that (where it has not already done so) either the government will take over and operate, or that it will control so thoroughly and completely that the effect will be much the same as ownership, the following:
   a. Telephone, telegraph, and radio;
   b. Railroads, a national and integrated system of highways, airways, the merchant marine;
   c. Power production, transmission and distribution;
   d. Gas, and oil pipelines;
   e. Forest and basic mineral and fuel exploitation;
   f. Irrigation, water utilization, and watershed control;
   g. Banking and insurance.

2. *Government regulation and policy control:* For reasons analogous to those above, it seems practically certain that the hand of the government will become more commonly and generally felt over economic institutions, processes and interests wherever the following obtain:
   a. Wherever social conflict is evident: between economic interests, races, or areas, and more clearly the more widely and powerfully any and every interest-conscious group is organized;
   b. Wherever private groups or organizations by formal compact or tacit agreement attempt collusively to control prices, production, market areas, or the more essential conditions and terms for the conduct of business;
   c. Wherever economic unbalance is threatened: that is, wherever policies and decisions made by any private group or groups threaten economic collapse or, conversely, wherever action can be taken to insure a high and permanent level of national prosperity which involves directly or indirectly curbs upon or action through the offices of private groups;
   d. Wherever the conservation of basic natural resources of minerals, land, animal and plant life is at stake;
   e. Wherever economic power becomes sufficiently great to threaten the hegemony of the duly constituted political authorities, or where it threatens unduly to oppress any other and weaker group;

f. Wherever any group or any set of avowed opinions or policies threatens by resort to overt action to arrogate to the group power which rightfully belongs to the state (e.g., the treaty-making power), or where the successful propagation of anti-democratic doctrine noticeably begins to undermine widespread public acceptance of the principle tenets which clearly underlie the dominant system of government, or the procedural methods deemed appropriate to it by crystallizing into organized forms which pursue objectives by undemocratic means;

g. Wherever the action of the individual or the group are clearly and admittedly contributory to war;

h. Wherever economic and social distress, the alleviation of which lies clearly outside the control of the individual or the group, exists on a scale seriously to jeopardize the general acceptance of the basic value systems of our society as a whole—this includes the whole of the so-called social services and social security programs visualized in such reports as those of Beveridge and the National Resources Planning Board.

This list is not necessarily complete, but it does include the more important areas of governmental activity which are relevant to the subject of this discussion. The notion of what is necessary to maintain a high plane of living in our modern complex industrial society has been broadened out in recent years until it has come to include a vast territory—a territory which goes far beyond the remedial and balancing measures suggested by the followers of J. M. Keynes.

Does this mean that we are headed for a vast spread-eagling of the Leviathan state which the Beards have described, or the colossal "Behemoth" which Franz Neuman has so carefully dissected? Or necessarily to either Fascism or Communism?

I think not; at least not necessarily. It does not definitely or necessarily mean the "paternalistic" state, or control of all economic life by a centralized "bureaucracy." It does, however, most certainly mean more and more careful planning. Not planning because it is a substitute for "individual initiative"—which it is not and never can be—but because in the modern world without it very nearly all individual initiative will be suffocated to death. It is not bureaucracy that is to be feared, but badly functioning bureaucracy; not planning but bad and unimaginative planning.

Let me, in closing, comment briefly on this last point. I do think—and I hesitate greatly to utter these groaning words—that we are in for more and more bureaucracy. The term is terrifying to most, and rightly so. It stands in the common estimation for endlessly meddling officialdom, for inefficiency and red tape, for "run-around" and irresponsibility, for never-ending increase in manpower and budgets engaged in the non-essentials, for machinery and committees for what Veblen has called "the sifting of sawdust," for the flunkey and what the Germans call *Kadaver-Gehorsam*—"corpse-like obedience" of the menial on the one hand, and the mental-emotional "arterio-sclerosis" of the autocrat on the other.

There is much justification for looking at matters this way. But if such is the way bureaucracy is to be regarded, even then I fear we are, alas, in for it. Business is becoming bureaucratized on its own right about as rapidly as government, and in much the same way—as the monumental German *Enquete Ausschuss* and our own Temporary National Economic Committee reports (see, in particular, Monograph 11) were not the first to discover. There has been elaborated in recent years a fairly good technical literature on the subject, and with minor exceptions it seems to be agreed that no clear line can be drawn between government and organized non-governmental activities with respect to these points. The thing happens in very much the same way, and with very much the same results, for bureaucracy appears not as a Frankenstein monster sprung from the institutional loins of government, but as a perfectly natural growth from complex organization. The most careful and best-known writer in this field, Max Weber, has, indeed, treated bureaucracy as a problem of scientific organization which is more or less peculiar to industrial capitalism. Call it by any other name, or slice it in any other way, the structure of all large-scale organization comes out the same way—to bureaucracy.

But the creature need not turn out like a character role for Boris Karloff. We have, over the last couple hundred years, learned a little about the science of organization. One of the things we have learned is where to draw the line between centralization and decentralization; between policy control and management; between coordinated planning and free play for individual and group initiative; between unity and freedom. This is not the place to go into the subject. It is far too complex, and there is far too much debat-

able ground involved for that now. But it is, perhaps, worth pointing out that these techniques, though still in the experimental stage, do not carry with them any necessary implications for the type of political and social system. The system of policy centralization and managerial decentralization developed in the United States by the A.T.&T., for example, was readapted for use by the General Motors Corp., by the giant I. G. Farbenindustrie A.G., and the Vereinigte Stahlwerke in Germany, and by the leading industrial trusts and combines in the Soviet Union. These adaptations are illustrative of the point that a proper, flexible, and intelligently directed system of planning, coordination, and general policy control from central headquarters is thoroughly reconcilable with managerial and individual initiative down through the ranks. They also show that, just a completely preindustrial society can be either democratically organized or governed by an irresponsible autocracy, so planning can be adapted to democratic as well as totalitarian ends.

From a technical point of view, so far as this discussion is concerned, it is worth pointing out that within the tight structure of complex organization, the principles of delegation and decentralization are steadily being substituted for the technically primitive interplay with which we associate the term laissez faire. It is possible, in short, to live in a planned world and have more freedom; see an extension of government control and witness more genuine play of "individual initiative"; live in "One World" and be its prospering masters instead of its poverty-stricken slaves.

Some may reply that this is only arguing that we can have our cake and eat it too. This is a mistake, for the most ardent proponents of laissez faire never argued that it *was* the cake. It was supposed to supply, not be, the object of the heart's desire. We are learning how to handle the problem of how to maintain a high plane of living, not by holding to an outmoded dogma, or by solving a philosophical conundrum, but by taking thought as to how the cake can be kept coming once the picnic has begun. The endlessly complex machinery—perhaps much of the ingredients of the cake too—can be left to the experts; policy control is certain to lie ever more clearly in the hands of government which is in a position to speak for all eaters alike.

# A REACTION TO LAND VALUE CONTROL PROPOSALS*†

C. H. HAMMAR
*University of Missouri*

THE control of the values of farm lands is being vigorously proposed at present (July 1943) and there is, perhaps, no more fitting conclusion to a study of land value dynamics than a discussion of the pros and cons of these control proposals. A sound take-off for such a discussion, furthermore, is a consideration of why such controls are being so vigorously advocated.

The desire for control is based rather flatly on the wish to prevent a rise in value similar to that which occurred from 1914 to 1920 during the last war period and the disastrous aftermath. The inflated prices paid for land during the last war period undoubtedly were a major factor in the agricultural unrest of the 'twenties though to trace the agricultural problems of the 'thirties to the same source, as has all too often been done, is altogether too superficial. Land value inflation had ceased to be a major factor in agricultural distress along about 1928 or 1929. Returns to land investment in that year were above rather than below returns to investments in common stocks and probably to the mine run of other urban investments of the property type. Agriculture suffered pretty much alone during the 'twenties partly because of inflated land values and partly from other causes but in the 'thirties farming suffered not alone but with all other major groups in the nation. Carrying forward the story of foreclosures and farm bankruptcies in the 'thirties to make it appear as a mere delayed after effect of World War I is to make use of fear rather than reason in drumming up support for land value control proposals.

## *Presumptions Underlying the Advocacy of Controls*

The advocacy of controls is based flatly upon the presumptions (1) that there will be land value inflation, (2) that the aftermath will be a repetition of the foreclosures of the 'twenties and, many

* This paper, adverse to current land value control proposals, is the last major section of a larger study of Land Value Dynamics and the Capitalization Rate. Obviously the contents of the paper lean on those of the larger study but not to such an extent as to make their comprehension without reference to the larger study at all difficult. Since the matter of land value control is of great moment and since an approach quite different from those hitherto proposed has been made herein there may be point in the publication of this paper in advance of the larger study.

† Contribution from the Department of Agricultural Economics, Missouri Agricultural Experiment Station, Journal Series No. 912.

presume, the 'thirties, (3) that controls can and will accomplish their objectives and (4) that the inadvertent and unwanted effects of the controls may safely be ignored. Each and every presumption needs, of course, to be subjected to a thorough-going examination.

*Standards for Judging Land Value Inflation*

First, will there be an inflationary rise in land values? That there will be a rise in land values is a foregone conclusion. They have been rising since 1933 and the rate of increase stepped up both after the onset of hostilities in Europe and after Pearl Harbor. That there will be an inflationary rise is, however, a more moot matter and depends on the standards that are selected or the basis for judging whether or not inflation has occurred or is occurring.

One such standard, and the one greatly depended on by those wishing to make the strongest possible case for control is the rising dollar value of land. Somewhat similar is the comparison of the magnitude and rate of rise in present and World War I periods. These two, while not identical, are not unlike and both, though particularly the latter, bear examination since both disregard what may be labelled the investment as contrasted to the dollar value of land.

At the beginning of World War I, or in 1914, land values were already, from the significant viewpoint of the returns to investment in land, upon an inflated basis. The ratio of net cash rents to land values in Iowa that year averaged only 3.7 percent or much below the average mortgage borrowing rate. The relationship of the rent-value ratios and the borrowing rate in Atchison County, Missouri, reveals the same clear evidence of this type of inflation. See Figure 1.

From these already inflated bases, values in Iowa and Atchison County and elsewhere moved upward very rapidly. That is, the gain in values in Iowa from 1914 to 1920 was at the rate of 17.5 percent a year and in Atchison County about as great, with rises in other midwestern states on much the same order. The rent-value ratios in Iowa and Atchison County, as has been so often stated, fell sharply during this same period.

Developments in the present period or since 1939 have been by no means similar. From 1939 to 1942 the gain in values in Iowa was only 8 percent as contrasted to a gain of 28.8 percent from an already inflated level from 1914 to 1917. In Missouri the advance from 1939 to 1942 was 14 percent as contrasted to 11 percent from

1914 to 1917, but drought plagued Missouri with unusual severity in the 1930's so that values in 1939 were only at an index of 59 as contrasted to 55 at their low point in 1933 (1912–14 = 100), consequently the rise after 1939 was from an abnormally low level and, therefore, means little. On the whole, therefore, the gains in values during the present war period have been at a moderate pace from a low base while the gains from 1914 to 1920 were at a high rate from an already high base.

The contrast is equally striking when the course of the ratios of rents to values for the two periods are compared directly. From 1914 to 1917 the ratios of net cash rents to values in Iowa fell from the already low figure of 3.9 percent to the still lower one of 3.1 percent. By 1920 the ratio had fallen to 3.0 percent. The developments in Atchison County as has been pointed out were similar. By contrast after 1939 the ratios in Iowa rose from 4.9 percent (a figure approximately equal to the current mortgage borrowing rate) to 5.2 percent in 1942. Data are available for Atchison County only till 1940 and a similar comparison cannot, therefore, be made. Yet the conclusion is clear. There must be much less inflation where land values rise slowly from a low base than when they rise rapidly from a high base and when the current return to investment rises instead of falls. Such being the case the evidence of land value inflation up to the beginning of 1943 is by no means as conclusive as many have insisted.

A further standard and a more significant one, though perhaps more difficult to employ, is the standard that would judge the degree of inflation on the basis of a criterion of a *proper* or *sound* level of land values. What is a proper level of values and are present values too high or too low?

There are two possible answers to this question. The one is the answer that the investor would employ and would be based pretty much on the conparison of the cash rent-value ratios, and the current mortgage borrowing rates as has been so comprehensively outlined above.

The other answer must be couched in much more general terms. Land values will be at a proper level when in a full employment economy (given the level of the value of the monetary unit) they function in such a manner that land investors can look forward to receiving about the same returns on their present and prospective commitments as may investors in other types of property.[1]

With these criteria in mind certain reasonably dependable judgments on the level of values may be passed. In 1920, for instance, with employment at a peak and the American dollar high in relation to all the major currencies in the world the cash rent-value ratio was at an abnormally low level and land value inflation was undeniable. In the 'thirties with employment and demand for farm products at abnormally low levels, land values too were at deflated levels.

From the deflated levels of a depressed and stagnant economy land values should be expected to rise and such is exactly the nature of the rather moderate rises since 1933. There is, furthermore, no reasonable basis for regretting such a rise unless indeed one regrets the reestablishment of a full employment economy[2] which would be an odd regret for an economist. Land values in the United States in 1942 when a full employment economy had been attained were in fact lower than they had been in the 1912–14 period prior to the first world war.

### *Land Values and the Inflation Aftermath*

There may, of course, be objection to the standards that have been suggested above for judging land values in relation to the level of employment since there is no absolute assurance that employment can be maintained at the full employment level after the war. Some level of employment must be presumed, however, before any satisfactory standard can be established for judging the soundness of the level of land values. That is, almost any level of land values may be too high if employment falls low enough. The ideal with respect to employment is full employment and that level is,

[1] Perhaps to complete fully the statement of this standard the further presumption, that during a period of full employment there will be about as great a foreign demand for farm products as may reasonably be expected, should also be made.

[2] J. D. Black, with a lack of depth of reasoning that is not usual with him recently gave support to those crying "wolf" for the sake of establishing the need for land value controls. In his recent book Parity, Parity, Parity he states, ". . . the problem of keeping inflation under control has two phases as far as agriculture is concerned: first, that of keeping the price level in line and second, that of holding land values down. The second is greatly dependent on the first but not wholly so. If the general price level were held where it is . . . there would still be a good choice (chance) of a runaway land market if nothing is done to prevent it." Black has obviously here taken no trouble to ask himself what a proper level of land values is and whether the level at the time of his writing was a proper one. Without such standards established in advance his rather free passing of judgment has not too much to recommend it since it is too nearly a proposal to control for control's sake. He has not in fact established at all any need for any independent control over land values.

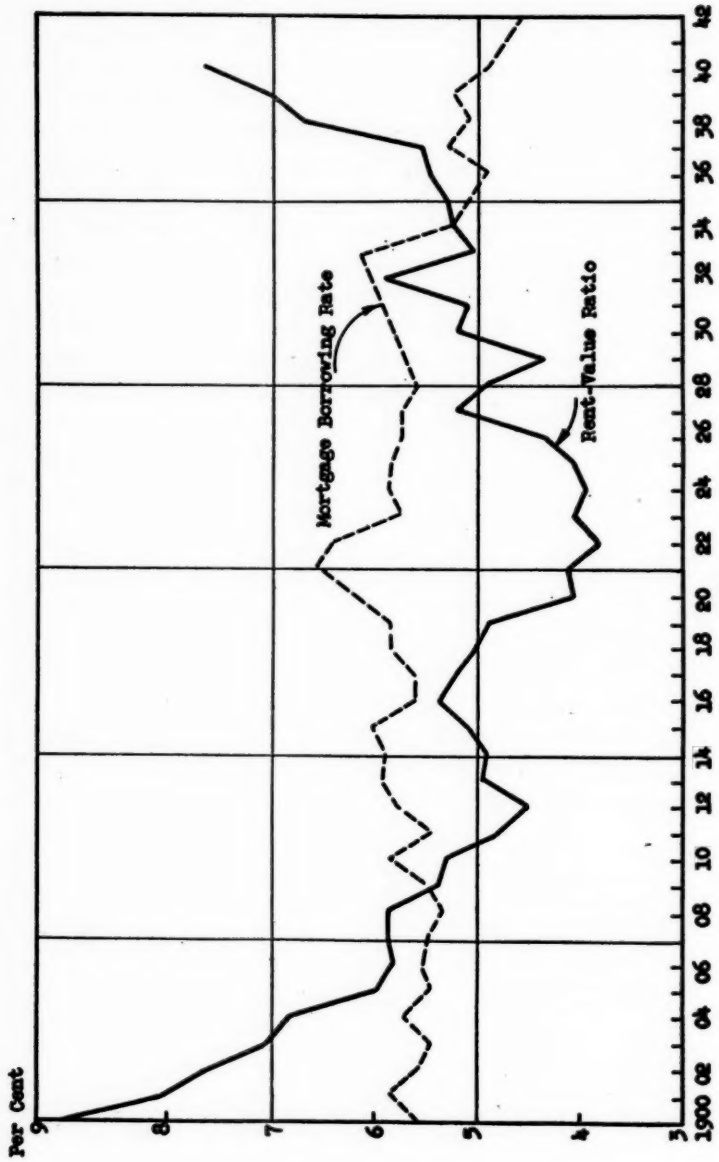


FIG. 1.—THE MORTGAGE RATE OF INTEREST BASED UPON MORTGAGES FILED EACH YEAR AND THE RATIOS OF NET CASH RENTS TO LAND VALUES, ATCHISON COUNTY, 1900–1940

therefore, the most suitable one upon which to establish the standard for judging the soundness of the level of land values.

Commodity prices need not stop rising when employment reaches a peak, however. Indeed, they tend to rise most rapidly when, after full employment has been reached, the volume of purchasing power continues, for whatever reason to rise. The danger of land value inflation will occur (1) because of a failure to limit the volume of purchasing power to a level sufficient to bring about full employment or (2) because investors push the capitalization rate to abnormally low levels as was done during the last war but not so far during this one. Expanding purchasing power beyond the full employment level makes all the mischief and the control of land values, if it promised genuine help to the mopping up of excess purchasing power, would be a welcome matter as will be pointed out later.

Once there is inflation in the sense of a continued and considerable rise of commodity prices after full employment has been reached, there is indeed likely to be a deflationary aftermath. The advocates of land value control hope by their program to soften the bitterness of this period of deflation by preventing or limiting the rise in values assuming that such rise will occur. The possible course of error is in their presumption that deflation will occur; because, while deflations have been an invariable aftermath of war historically, there is nothing inevitable about them. They are merely evidence of public and governmental mismanagement of exactly the same general type that permitted the inflation in the first place.

Even the failure to maintain full employment after the war need not, however, mean a return to pre-war levels of prices. Many other developments are possible and the longer the war and the more confirmed the higher or inflated level of commodity prices becomes the lesser is the likelihood of a return to pre-war price levels. After the last war France devalued the franc and prices continued at much the same level to which they had risen during the war period inflation. This level was about 500 percent of the pre-war level. Italy also devalued and stepped to a permanently higher price level.

Prices in the United States remained in the 'twenties on an average about 40 percent above their level in the 1910–14 period though they had fallen much lower in 1921. Deflation is, therefore, neither

inevitable nor is it likely to be such that prices fall to a pre-war level immediately or shortly after the war as the land value control advocates assume. In the 'twenties the wholesale all commodities index remained on an average about 40 percent above its pre-war (1910–14) level. There is, furthermore, no evidence now that the level of land values is above one that would be suitable and proper if the price level was to be maintained 40 percent above that of the 1934 to 1939 period.

In brief, prospective post-war developments need not be such that land value controls are necessary or advisable and it would probably be difficult to establish that the pattern of previous post-war developments has been such as to make such controls as imperative as many have insisted.

### *Can Controls Attain Their Objective?*

The superficial objectives of land value controls are to prevent an inflationary rise in values during the war or the control period with the auxiliary purpose of preventing a bitter aftermath of post-war foreclosures and bankruptcies. The real objective, however, must be to protect someone from someone else or some group from some other groups since rising or falling land values are hardly a major calamity as such.

The matter of who is being protected from whom, assuming a program of land value controls to be effective, is, therefore, of major importance.

In the literature of land value controls there is often the implication that farmers are to be protected from other groups in the economy. However, controls can hardly work in so simple a manner. Farmers are sellers as well as buyers of land and sellers would hardly welcome having to accept lower prices because of controls. There are no available comprehensive data showing what individuals or groups hold the bulk of the titles to land. Probably the great bulk of titles are, however, in the hands of operating or retired farmers and among the farmers the older farmer is much the most likely to be the owner. Younger farmers are chiefly buyers and the older farmers sellers.

If farmers are the chief holders of land titles, controls that hold down land values are not going to protect them from other groups so the objective becomes one of protecting either other groups from farmers or protecting farmers from themselves or perhaps of

protecting buyers from sellers. Since buyers are chiefly the younger men and sellers the older, the major objective precipitates rather thinly down to the protection of younger men from the older. At least this will be a major effect of the controls.

In brief then land value controls will not protect farmers from others. The gains and losses about offset one another if farmers are merely protected from one another, for what one farmer loses another gains. If there is to be any net gain it must be (aside from possible repercussions on the volume or cost of farm production) from the protection of the buyers from the sellers.

Any gains from this source are certainly a dubious foundation for so ambitious a project as the control of land values. The protection provided would probably have its greatest effect in the period immediately after the cessation of hostilities when a great number of farmers' sons will be returning home from the war. It was in an analogous period after World War I, that is, in 1918, 1919 and 1920 that the great volume of land transfers took place and a similar post-war development is surely imminent.

If land values are held down by controls these returning soldiers and war workers will be able to buy their farms at prices more satisfactory to them. However, what buyers gain sellers lose and it is worthwhile to ask who the bulk of these sellers are likely to be. They will be, of course, the older farmers who are the great sellers of land. Many and perhaps the bulk of these older farmers will have farmed and perhaps have paid for their farms during one of the most trying periods in the economic history of American agriculture; that is, during the two decades from 1920 to 1940. The likelihood that the purchasers of the immediate post-war period will be subject to equally trying circumstances is remote. There is, therefore, the great probability that controls even in this case will work more injustice than justice.

Perhaps also it is worth noting that with these considerations of what the controls accomplish in mind, farmers themselves are probably going to be lukewarm in their support of controls. Politically the drive for controls is likely, therefore, to be very weak which in itself may be fatal to the hopes of control advocates.

### *Unwanted Effects of Controls*

The control of land values can be accomplished if the country wishes, since the means of establishing control may fairly readily

be made sufficiently powerful to achieve the result. The methods proposed have been of three major types including, as has been outlined by others, (1) credit control, involving farm mortgage debt ceilings; (2) heavy taxes (a) on capital gains from resale of farms and (b) on transfers of farms; and (3) land price ceilings and direct restriction of purchase privilege by means of a permit system.

If the analysis above has been correct the net gains from the establishment of controls will not be great in any event. The use of any one of the above methods of control will, however, have certain unavoidable subsidiary effects that are in a sense the costs of controls.

Credit controls with drastic debt ceilings cannot, for instance, be put into effect without some unwanted repercussions. The men which the nation perhaps most wishes to see take the first steps toward farm ownership are the younger men in a fairly early stage of their operating careers. These have energy, enthusiasm and drive for the heavy job of farm production that older men often lack. These younger farmers do not, however, have large savings as a rule and are often the ones who need to borrow a maximum if they are to purchase.

The tenant farmers of the 'thirties are the men who are now about ready to make their farm purchases. They farmed through a miserable decade during which their savings accumulations were meagre. They are going to need to borrow heavily if they purchase and, therefore, are going to be irked by credit control and debt ceilings.

On the other hand, debt ceilings are going to be welcomed by wealthier urban people and wealthy farmers as well. To the extent that debt ceilings are effective, they will dampen the demand for land which will have the double effect of reducing the price of land and increasing the rates of return that buyers may anticipate on their investments. Lands will, in other words, be a particularly good buy for people who have large savings available for investment and who, therefore, will not be troubled by debt ceilings. The effect on the tenure pattern of these debt ceilings will be counted undesirable by those who favor owner operatorship.

The unwanted effects of heavy taxes on capital gains and on transfers are quite different in nature. To begin with, such taxes tend to put an end to transfers. If sellers must pay all the tax they must in effect part with their property at a price so low that they

can hardly hope to find alternative investments that will provide them as satisfactory a rate of return as they can get by refusing to sell. If buyers must shoulder all the tax they must in effect pay a price so high that the investment loses its attractiveness. If the tax is shared between them there is just a lesser reaction on each but the total effect is the same.

Now after the low level of voluntary and high level of distress transfers all during the 'twenties and 'thirties there should be much to be gained by a large rather than a sharply reduced volume of voluntary transfers. The effect of the troubled years of the 'thirties was unquestionably to lead many to delay purchases that would otherwise have been made. If owners are more conservative users of land than tenants, as has often been claimed, there is a gain to be had by seeing that the normal movement up the agricultural ladder is facilitated and not obstructed.

By the same token something would probably be gained by permitting a normal retirement of superannuated operators and their replacement by younger men. The 'thirties slowed the accumulation of wealth on the part of farm owners and many of them must have delayed their retirement beyond a normal period. Effective controls will largely prevent their selling and there may be some loss involved. The loss of efficiency in this case will be small, however, because leases can so easily be substituted for sales.

More important will be the potential unevenness of the tax because of the uneven recovery of land values in the various parts of the country since 1933. The states centering around Kentucky have seen the greatest gains in values since 1933 while in the great West North Central Geographic Division values have gained very much less. Yet during the last world war the value gains in these West North Central States were among the greatest in the country. There is the great possibility, therefore, that for a time values in these states will gain much more rapidly than elsewhere. If controls were established immediately, therefore, and a heavy capital gains tax levied, it would apply with great unevenness. This unevenness might easily turn into political dynamite in such states as Iowa, Missouri, and Minnesota and particularly in the states from North Dakota to Kansas where the recovery in land values has been woefully weak so far.

One of the weakest aspects of the land value control proposals, however, resides in the fact that so little can be expected from them

in the mopping up of the excess purchasing power that is the real mischief maker. Effective controls are likely to stop transfers but not to stop the accumulation of investment funds potentially available in the land market. These funds can move in many directions to create about as much mischief as they would have created in the land market. They can go to farm sales and bid up the prices of livestock and farm equipment to fantastic heights. They can get into the stock market or the urban real estate market with equally disturbing effects. They can be deflected into overcrowded consumption channels and make the problem of rationing and price control more difficult. In this connection also, therefore, there is not much if any net gain in prospect from the establishment of land value controls.

Finally, there is the matter of the unwanted effects of the most drastic of all proposals made in connection with land value controls. This is the proposal to allow land to be transferred by permit only; the permits to be issued locally and under laws of the individual states. There has been some attempt to gain some prestige for this proposal by drawing an analogy between a system of transfer permits and the use of rural zoning as carried out in a number of states with some putative success. Just how permits correlate with zoning is left very vague, however, and should not hide the possible vicious effects that such a drastic requirement for transfer privileges may involve.

Those advocating permits put it in its best light as giving local farmers a right to determine who shall buy land in their community. The proposal has, therefore, the appearance of establishing democracy in the determination of the land tenure pattern but actually it takes no penetration to see how easily such a device could and would be used to perpetuate existing ownership systems. In the South the program would quickly be brought under the control of the existing plantation owners and the ownership aspirations of poor whites and colored neatly thwarted under the protection of the law. The permit system would be a made to order device for those who would like to thwart the efforts of the Farm Security Administration not only in the South but everywhere.

In general the permit system would act most often as an obstacle on the path to agricultural efficiency. Its tendency would be to put the system of ownership and, to an important degree, use into a straight jacket nearly everywhere and effort would immediately need to be instituted to burst the jacket. The nation, as I have

tried to point out in an earlier study,[3] thinks well of the ideal of owner operatorship of farms but not sufficiently well to sacrifice efficiency in agricultural production for the sake of that ideal. The land ownership pattern needs to be dynamic and a system of permits would by no means increase its flexibility.

### *An Alternative to Controls*

Despite the fact that the prospect of land value inflation has been overworked by those advocating controls there is nothing to be gained by denying its definite possibility. The farming community that supplies most of the funds to the land market is on the receiving end of a balance of trade as favorable as it was in the 1914 to 1920 period. Farm incomes have improved greatly and the memory of the hard times of the 'thirties is going to be a strong force stimulating an unusual degree of thrift among farmers. Furthermore, land values are rising and the prospects for further rises are so inviting that a decline in capitalization rates may yet occur.

Means to insure a continued judiciousness in land investment particularly on the part of farmers would, therefore, be a fine thing and, were it not for the dubiousness of current land value control proposals, there would be much to recommend the idea. Perhaps the mischief arises chiefly because of Dr. Black's early separation of the problems of inflation control into two categories of the control of commodity prices and of land values. Actually there is need only for control of excess purchasing power and the assumption of the additional need to control land values is the assumption that the excess of purchasing power has not been put under control.

When the matter is put in this light there is no room for a control of land values independent of the control of excess purchasing power. There is no reason, however, why the attempt to reduce the volume of purchasing power should not make use of the fact that some of this excess finds a natural outlet in the land market particularly if such control also exerted a healthy effect on land values. A program of reducing excess purchasing power in the land market would not, however, be land value control and should not be labelled as such.

The best method, known to the author, of using the land market to mop up excess purchasing power would be to require of each seller that he accept a portion of the purchase price say, 10 or 20

[3] See the Land Tenure Ideal—*Journal of Land and Public Utility Economics*, February, 1943.

percent of the total, in war bonds of the federal government. These bonds would be nonredeemable and nontransferrable until some predetermined date after the war's close when, presumably, the pressure of excess purchasing power would be at least much less. Indeed there could be at the later date some real need for additional purchasing power.

The rule of nonredeemability would need to be softened at times in order to avoid visiting hardship on the occasional seller whose circumstances for one reason or another genuinely required that he be permitted to use the proceeds of the bonds. Suspension of the rule in such instances would easily be accomplished by setting up local boards (almost certainly rationing boards could do a satisfactory job) to abrogate or modify them upon application. The appeal to patriotism could be used to reduce the number of such appeals to the minimum and local boards would know local circumstances so that there could be a reasonable expectation that abuses would be held to a minimum.

There are likely to be certain legal complications connected with any method of direct or indirect control but aside from these the method outlined above would have a number of advantages. In the first place it is not at all punitive as the other and more drastic proposals would surely be considered. It does not select for taxation a particular class of citizens who are acting in a (to them) perfectly normal manner. It has the great advantage of administrative simplicity and its application, by the use of these appeal boards, can be made to have the needed degree of flexibility. The unevenness of application because of the likelihood that land values will rise much faster in certain areas than others would be a lesser matter since the tax features are eliminated and the penalty involved is no more than a reasonable postponement of the use of purchasing power. The objective is the reduction of the volume of purchasing power and not the direct control of land values and such an objective is much more likely to be counted a legitimate one.

Finally, with a minimum of interference with normal and legitimate transfers, the requirement to accept bonds with the purchase price would actually drain off excess funds that under other programs outlined above would tend to remain in the hands of investors to be used for inflation mischief in areas other than in the land market. The method would be, therefore, a genuine supplement to other methods of inflation control by the reduction of purchasing power and not a mere method of deflecting that purchasing power elsewhere.

# ESSENTIAL FOOD REQUIREMENTS IN WARTIME*

M. K. Bennett
*Food Research Institute*

IT MAY be appropriate, as happened some years ago, for an economist to publish an article under the title, "A Blast against Economists." It might be appropriate now for a nutritionist to publish similarly "A Blast against Nutritionists." I confess that I scan the literature hoping faintly to find such an article as the second, for I believe that internal dispute within a scientific field is a sign of good health. As yet, however, no such article has come to my attention. On the other hand, it would not be appropriate for an economist to write "A Blast against Nutritionists." Nevertheless, any man is perhaps justified in sniping about a little outside of his own field of knowledge, and I propose to do that, if only for the purposes of expressing my own bewilderment at what goes on and stimulating the discussion which all of us seek.

It is difficult to engage in this sniping process in the field of human nutrition without arousing irritation and appearing to be a destructive critic or even an opponent of social progress. For "adequate nutrition" is clearly more than a scientific concept nowadays. It is also a slogan in social reform, a shining banner borne at the head of a marching regiment. Among the mass of bystanders who watch the parade of that regiment there may be a few who fail to cheer. Somewhat insecure in their minds about the occasion, this few may conceivably ask: Where is this regiment going? What is it about to attack? Has it got a definite objective? Is the objective worth taking at the cost of maintaining the regiment? Is there any possibility that this is a regiment of Don Quixotes, on the way to tilt at windmills? Such bystanders as these, and I confess I am among them, are not—if discovered—likely to endear themselves either to the regimental commanders, the volunteer rank and file, or the lovers of parades.

Suppose that you are asked, as I have been: Is there malnutrition in the world? Does not good health depend upon nutrition? Is not good health a precious thing, an important element in human welfare? Is it not the duty of governments to foster human welfare? Should governments therefore not spend huge sums to improve human nutrition? If you are asked such questions, you are not

* Paper read at sixteenth annual meeting of the Western Farm Economics Association, held at University of California, Berkeley, California, June 24–26, 1943.

going to please the asker if you keep answering, as I do, "Yes" and qualifying your answer with "—but."

Years ago, when a good many of my elders insisted that drinking coffee stunted the growth of children and I pointed out child friends who drank coffee but were bigger than I was, the answer was: They would be still bigger if they hadn't drunk coffee. And, I must confess, so they might have been for all I really know. I merely doubted it then and doubt it now. Today I feel more or less as I felt when that answer was given me—baffled, moderately confident that somewhere or other my seniors were not quite right, but unable to work up a thoroughly convincing argument that they were in any respect wrong.

The topic assigned was, "What Are Essential Food Requirements during Wartime?" Without even asking first the obvious questions—essential for whom and essential for accomplishing what—I give one answer briefly and evasively. I doubt if wartime foods need to be so packed with vitamins and minerals, so rich in animal proteins, in short so full of protective elements and so well balanced, as we are being led to think.

Let me read here a pair of quotations, both no more than three months old. One of them says, "Most workers in the United States are not obtaining adequate diets." The second says, "It is axiomatic that milk, milk products, meat, meat products, eggs and poultry constitute the mainstay of the American diet . . . . Any material shortage in the supply of these essential foods is promptly reflected in the physical condition of the people: Energy declines, and the evidence appears in reduced labor output, and in weakened courage and optimism." I read these without citing the authorities other than to say that one is a leader in nutritional investigations and the other a leader in a prominent farmers' organization. I read them for the purpose of registering an initial skeptical reaction. If there is in either quotation an implication—and I think there is—that better diets than the prevailing ones would greatly enhance industrial output in the United States, or an implication that moderate deterioration of the prevailing diets would have strongly marked adverse effects, I more or less instinctively react against the implications. I simply cannot feel convinced that food has so much magic in it. This, however, is not the same thing as saying that nobody would starve even if he had nothing to eat, or that no one would die of pellagra even if he got no niacin. The problem is

to find the language that will properly express, without understatement or overstatement, the influence of change in food intake upon human performance.

I do not propose to defend my impression—that we are perhaps being led to expect too much from proper eating—by a long and particularized analysis. Instead, I want to put before you some honest doubts and perplexities about the whole general problem of what gain in national health—and perhaps I ought to add efficiency, morale, happiness, and intellectual accomplishment—we could reasonably expect to appear if everyone in the nation without exception were to begin tomorrow to eat what the nutritionists call a good diet, the kind of diet said to contain the nutrients appropriate to maintain "buoyant health."

Consider first what many of the nutritionists say about the condition of the people of the United States.

It is alleged, if I understand rightly, that inadequate diets are widespread in the nation; that so-called "deficiency states" of nutrition are rife throughout the nation. The qualification is made that it is not severe and acute types of malnutrition which are so rife. What is rife are subacute or chronic types, very many of them mild or moderate. I understand that it is now the custom to think of deficiency states of nutrition in the categories (1) severe acute, (2) mild acute, (3) severe chronic, and (4) mild chronic.

This might suggest a possible classification of the present audience and speaker with reference to hair on the head. In one category are the hairless and the bald to which I belong. You are not in much doubt about it, and neither am I. Then there are those who, so to speak, are balding. You can spot these pretty well. Then there are those who are only losing hair; next, perhaps, those whose hair is not normally thick; and finally those whose hair is not of optimum thickness. It is not very easy to distinguish these last three one from the other, or even from those whose hair *is* of optimum thickness. All of these groups from the bald to the non-optimum-haired, we may say, are people whose state with reference to hair on the head is defective, is not what we think it ought to be. If we take pains to set up a good high standard for thickness of hair per square inch of scalp, I think we might well leap blithely to the sad conclusion that baldness is rife in this room; and, since we are Americans, probably rife throughout the nation. And yet we might not observe many people who are unmistakably bald.

The obvious comment on this conclusion is: So what, and who cares? And the parry might be, though I do not offer it: Surely something ought to be done to make the whole nation non-bald; let us have by all means at any cost a nation characterized by optimum thickness of hair growth.

The suggested analogy between prevalence of malnutrition and prevalence of baldness is of course not fair, because we all are honestly and deeply concerned about the well-recognized and readily perceptible effects of malnutrition, while very few of us care about the readily perceptible fact of baldness. Nevertheless the analogy serves to illustrate one point. The point is, that once we depart from consideration of the national incidence of "severe" stages of either malnutrition or baldness, we begin to run into statements about deviation from norm and deviation from optimum that are very difficult to phrase in a balanced and judicious way.

In my opinion, it is not judicious, for anyone who seeks to be able to say what precise fraction of the nation is malnourished, to include under the term "malnourished" either (a) everybody who does not eat a diet composed as the experts say a diet ought to be composed, whether or not these people show any palpable effects of not eating rightly; or (b) everybody who shows even the faintest diagnosable trace of a "mild chronic" or "mild acute" state of deficiency presumptively traceable to deficiency of food intake. And this, if I understand the situation, is what many students of human nutrition are doing nowadays. If I am not mistaken—and I may be —the tendency is to include even the most trifling evidences of improper food intake or of deficiency conditions under the terms "malnutrition" or "prevalence of deficiency diseases." And by so doing it is possible to reach the general conclusion and give the general impression that something is terribly wrong, that bad nutritional circumstances are rife throughout the nation.

We must all know that there is not much difficulty in finding defect if one looks for it earnestly and is privileged to decide for himself what it is that shall be regarded as non-defective. Everybody is familiar, I am sure, with the fact that leaders in the field of human nutrition do not set up as a nutritional goal a diet so composed of the nutrients as to insure against emergence of palpable and recognizable nutritional disease among all who partake of it aside from a normal fringe of abnormally-constituted individuals.

What is set up is rather something that has a "margin of safety"—perhaps a substantial one—something more like an optimum than a norm. Not even mere "health" is sought; it is rather "buoyant health" that is desired. On the side of medical criteria, I notice that the standards are sometimes set high enough so that evidence of thiamin deficiency is regarded as present when people fail to feel in their toes a vibratory sensation in response to a C-256 tuning fork. One begins to wonder whether there does not exist, in these criteria of what people ought to eat and how they ought to respond to tests that reveal imperfect eating, some tendency to establish Superman as the proper criterion of normal human behavior.

What it boils down to is this: If you set your standards of the normal or the ideal high enough, with reference either to food intake or to medical and chemical examination of people for discovering every evidence of defect in tissue or performance that can possibly be assigned to their nutritional practice, you are sure to be able to uncover a very large fraction of the population that does not measure up to the standards set. In the same way, we all know that as teachers we can fail either large or small fractions of our classes. It depends upon what standards of performance we require them to reach. The basic questions in this nutritional problem seem to me to be: To what extent do the deficiencies that we can find really matter? Is the gross functioning of the people as human beings really significantly below what it could be with better nutrition? And could improvement of functioning be obtained at a cost proportional to the result?

I cannot answer these questions. It may well be that nobody can answer them with strict scientific objectivity and conclusive scientific demonstration—at least not yet. Perhaps experiments of a sort not yet attempted, or even feasible to attempt, would be necessary before we could get at the full truth.

It is an interesting observation that one experiment that might perhaps have been made has not been undertaken, at least to my knowledge. A couple of years ago many nutritionists were convinced that a large fraction of the population stood in various states of nutritional deficiency with reference to intake of thiamin. For several months now, by governmental order, the great bulk of the flour and bread consumed in the United States has been enriched not only with thiamin but with other essential nutrients. A visitor from Mars would, I am sure, be much interested to know whether

this policy had resulted in a measurable improvement in the health or the performance of the people. I do not know what he might find. But I feel fairly confident that he would discover that no specific test had been prearranged by sponsors of the policy to determine whether a perceptible change, large or small, in either health or performance of the population would really occur on institution of the policy. The marathon runners began to race, but the officials never let them know where the end of it was, so that nobody could tell who won. I am fairly confident also that, in the present status of nutritional opinion, a negative conclusion would have no practical effect on policy. Support could not be had for withdrawing the order. Too many people might feel that after all a gain *might* be there even if we cannot find it, and if so we ought not to risk losing it.

Let me now suggest two other experiments—first, one of a type that is not impossible of performance, and then one that is outside the realm of the practical.

For a feasible but untried experiment, let a thousand skilled workmen be selected from manufacturing establishments or elsewhere on the criteria that they are 45–50 years of age, so that their food habits are well established, and that they are the *best* workmen of their kind that can be found by any known tests of efficiency. Next, let their diets be examined in the fullest detail to ascertain how many measure up to the famous "recommended daily allowances for specific nutrients" of the Food and Nutrition Board of the National Research Council—the most authoritative standard that we have. Is it to be supposed that a large fraction or a small fraction of the workmen would be found to be measuring up to standard? We do not know, for there is no such experiment. I would be inclined to guess that the fraction might be small, and that the conclusion appropriate to draw might be that the trouble lies mainly with the standard of food intake and not with the actual intake of food. Yet, even if such a conclusion emerged, I would not expect it to be widely accepted. The retort of the nutritional enthusiast might well be the same in drift as the retort of my elders who disapproved of coffee drinking by their own children. The retort might be: True, they do their work well, but think how much better they would do it if only they ate the optimum diet. And again I would be left feeling vaguely unsatisfied but unable to prepare a convincing rebuttal. I would feel better if the experiment

should be tried. Why is it that, in nutritional investigations of human subjects, so little effort is made to uncover the relationship between excellent human performance and the food intake of the excellent performers? Do we fear to find a correlation between high performance and mediocre food intake?

Consider now a second experiment quite impossible to execute. Let there be selected at random from the nation's white population 100,000 demonstrably healthy young males and females half and half; pair them up; build for them a city divided in half by a broad boulevard; equip the city on both sides of the boulevard with identical up-to-date water supply, sanitary services, medical and hospital services; and put half the couples on one side of the boulevard and half on the other and keep them apart for a century. For a hundred years give each half identical employment, identical incomes, identical housing, identical amusements, identity in every conceivable aspect of living except food. But make each community eat at its common table. Let the heart of the experiment be to feed one side of the city on a diet built around the recommended daily allowances of the Food and Nutrition Board, but to feed the other side of the city with a diet that might be called a minimum protective diet—one necessary to prevent the emergence of what an average physician today would recognize as a case of any of the presently-known deficiency diseases. I suppose that we do not have as yet an authoritative statement of the composition of such a minimum protective diet with reference to each of the specific nutrients. Yet one can easily imagine that the levels of recommended nutrients in such a diet would be considerably below the levels of the diet containing the "recommended daily allowances" of the Food and Nutrition Board. Suppose further that in each half of the city there is to be active education with respect to the best use of the available food supply. Let the composition of meals in communal feeding in each half of the city be dictated by the best knowledge there is, but have no compulsion about the act of eating. In either half of the city, the foods would be familiar foods.

Suppose this goes on for a hundred years. At the end of the time, the two populations and their history are studied. The examiners compare numbers of population, birth rates, death rates, life expectancies, morbidity rates, stature, weight, all sorts of physical measurements. They diagnose everybody for the state of nutritional adequacy. They also make comparisons of scientific and literary

and athletic achievements, and they apply intelligence tests and achievement tests. They pry into matters of industrial output per man-hour of work. They have before them the statistics of monetary costs of operating one half of the city as compared with the other half over the century. They have specific records of the food costs of the two halves of the city, and they obviously know that the per capita cost of the well-fed half is much higher than the per capita cost of the less-well-fed half.

The question is: What differences would the examiners find between these two populations? Would they be able to show conclusively that the well-fed population was in better health, had functioned better, than the less-well-fed one? And if so, in what respects?

In the present state of nutritional theory, I suppose that we cannot know the answers. Yet anyone may engage in speculation. I hazard the guess that differences there would indeed be between the two populations, but that the differences might not be very substantial. I wonder if the examiners might possibly even go so far as to conclude that the achieved superiority of the well-fed population might not in retrospect seem clearly worth the extra money spent to achieve the superiority.

It is my guess that perhaps even in the well-fed population at the time of examination would be found a fringe, not altogether trifling numerically, of people who showed evidence of what are now called "deficiency states of nutrition." These might be found, I conjecture, in spite of the availability of an optimum diet and in spite of education toward the consumption of it. That might occur, I speculate, for several reasons. First and most important is the probability—strong to my mind—that by no means all so-called "deficiency states" are properly attributable to food intake. Second, I do not readily see how individuals in the mass can all be expected to have the same physical and psychological make-up, the same glandular structure, the same metabolism. In a population so large, even starting with perfect physical specimens as the root stock, it may not be at all unlikely that in the course of time differentiations and a fringe of abnormality would appear and would find reflection in the tests for nutritional defects.

My speculation, in short, is that the improvement of human functioning obtainable by feeding a population on an optimum diet instead of a minimum protective diet may perhaps be rather small

and perhaps not clearly worth the cost. This view could be expressed, partially at least, in a graph. On the vertical axis, let us measure that vague thing called functioning of the human race—bad at the bottom, excellent at the top. On the horizontal axis, let us measure composition of diet from poor at the zero end to minimum protective at the middle to optimum at the far right. It is assumed, I think properly, that the cost of the diet is practically certain to increase as composition improves, though probably not in direct proportion. If we plot a curve showing a relation between the two variables, human functioning and composition of diet, my speculation is that the curve may rise very rapidly from the point of poor diet to the point of minimum protective diet, slowing a little as it runs, and then may rise quite slowly to the point of optimum diet. That is to say, for every increment of improvement of diet from the minimum protective to the optimum I conceive the possibility that there may be only a small increment in the improvement of human functioning; whereas from the point of poor diet to the point of minimum protective diet there may be a substantial increment of improvement in human functioning.

I cannot find in the literature, though I wish I could, a clear expression of the views of nutritionists about this curve. Its form is important, because to a considerable extent future public policy may depend upon it. Few would deny nowadays, I imagine, that very heavy public expenditure aimed to improve human nutrition would be worth while if we could be sure of substantial and perceptible improvement in human functioning. On the other hand, few would support heavy public expenditure that might result in only minor improvement of functioning. People are inclined to weigh what they buy against its cost. I conceive that there is probably a large difference between subsidizing food consumption so as to raise people from the point of poor diet to the point of minimum protective diet, and subsidizing consumption so as to raise people from the point of minimum protective diet to the point of optimum diet.

Let me now pose two questions. First, where is it likely that the population of the United States stands now on this imaginary curve suggesting the relationship of human functioning to quality of diet? We do not know, and probably we cannot. In any event there cannot be one composite curve, for nutritional deficiencies are of diverse sorts and refer to particular nutrients. But for the sake of

argument let me hazard the guess that the proportion of the population standing now in the range between poor diet and minimum protective diet may be decidedly small—smaller, I should think, than in any other group of 130 million people that could be gathered together by any combination of nations. I have this impression in spite of numerous dietary surveys almost unanimous in concluding that large fractions of the surveyed populations do not consume enough calories, to say nothing of the protective nutrients. My impression is both that the standards of comparison may be unduly high, and that the surveys may not be technically able to support the conclusions drawn. These are impressions, and they may be wrong; but there they stand.

Second, if my guesses are right that the great bulk of the population stands now in the range between minimum protective diet and optimum diet, and that the improvement in human performance might better be described as slight or moderate than striking or tremendous if all of these were moved to the optimum, I see little danger if many in this group are obliged during wartime to go shorter than usual on one nutrient or another, always supposing that they need not go to extremes. That is another way of saying what I stated earlier—that the food essential for wartime may not need to be so packed with vitamins and minerals and so rich in animal proteins as the nutritionists have led us to believe. Are we to believe that the Confederate Army lost its fight for reasons of inferior nutrition or that the Russians held Stalingrad by reason of superior nutrition? I suspect that nutrition was a small factor in these great affairs. The suspicion makes me regret what seems somewhat in evidence in this country—a feeling, perhaps only popular and uninstructed, that we can almost eat our way to victory.

All this represents a point of view—a view not at all certainly right, but also not certainly wrong. From what I have said you might properly conclude that a gnawing worm of suspicion lies in my mind that there is still a degree of superstition in the science of human nutrition—something not unlike the cannibal's belief that to eat the heart of an opponent brave in battle is to acquire his courage. The relationship of thiamin ingestion to suppression of nervousness and promotion of morale is sometimes spoken of in terms that to me approach superstition more closely than science. On the other hand, I would not like anyone to infer that I hold in contempt either "good nutrition" or public policy to advance it.

In particular, I have much more respect than what I have said may suggest for the application of nutritional science to the feeding of children, though even in this branch I hope that mere bigness and rapidity of growth are not all that is sought. The proper objectives of feeding children are not identical with those of feeding pigs, baby beef, or chickens.

The point of view makes a difference in the approach to practical problems. For example, here in the Bay Area we have shipyard workers, three shifts to a yard, and complaints about their food. The problem looks like a joint one of dietary adequacy, food preferences and tastes, labor-capital relations, shortages, rationing, accessibility of retail stores and restaurants, and time to eat. On the assumptions that each shift has half an hour to eat its mid-shift meal and must get it in or close to the yard, and that a great many workers find it inconvenient or even impossible to bring box lunches with them, what is to be done?

The true cynic on nutritional matters might dismiss it all with the simple solution of doing nothing or merely arranging for concessionaires to be available, selling sandwiches and soda pop. This is speedy, cheap, and economical of space, equipment, and labor. The enthusiastic nutritionist might feel that the proper solution would be to build cafeterias wherein every workman might obtain a balanced and highly nutritious meal of soup, crackers, green salad, meat, potatoes, one or two green vegetables, whole-wheat bread, butter, a glass of milk, and a dessert or raw or stewed fruit. This requires an enormous amount of equipment in the form of stoves, utensils, dishes, counters, chairs, and whatnot; it would require a great amount of space if large numbers of workmen were to be served in half an hour; it would require much labor in cooking, serving, washing the utensils and dishes and maintenance of plant.

I would stand somewhere between the cynic and the enthusiast. My notion would be to explore the possibility that each yard build kitchens and counters, wherein was prepared each day a selection of several good meat-stretching hot dishes, and a hot beverage and nothing else. I would have the hot dish served in a pint paper container with a wooden spoon, and the hot beverage in a paper cup. That assumes that the paper containers could be had, which is not at all certain. I would have available also for men to pick up as they went by some French-type bread without butter, apples and

oranges, milk instead of the hot beverage if they chose and if the milk could be had, and a firm sweet like doughnuts or Danish pastry or cupcakes. I would charge twenty-five cents even if it meant a loss. I would rush the men through by means of turnstiles on insertion of the coin—if they would consent to this, as I am told they would not. They would eat outside the serving room, and throw their containers and waste into garbage cans. The question of whether tables and seats, under shelter, would have to be supplied is an important one, but I have no clear opinion on it. Last but not least, the hot dish would be sold for workers to take home as they left the yard, for use as the main dish of a meal at home. By meat-stretching hot dishes I mean such things as meat stews, fish chowders, chile beans, macaroni and cheese, hash, rice with ground meat and gravy, and so on.

Such a system, I think, would go far to solve the complex problem that exists. A workman could get a hot and filling meal that tasted of meat, not too badly composed, for little money and in a few minutes. You can see that I would do relatively little worrying about the array of vitamins and minerals in the meal: speed, economy, and palatability are what I would stress most. But one is not ignoring nutritional values if he includes milk and fruit.

Let me add my opinion that sizable segments of the American public as time passes during the war and after are quite likely to be forced by circumstances to climb down from their accustomed level of ingestion of animal products as a food group—milk, butter, cheese, meat, fish, poultry, eggs—and posibly also from their customary ingestion of perishable vegetables and of fruits. They are quite likely to have to climb down still farther from the levels of optimum nutrition that have been set as goals. I do not fear the effects upon our war effort. The wartime nutritional problem is not, as I see it, to struggle for and preach improvement in the composition of the *average* American diet, but to make better use of what we shall have, including its distribution among claimants. Of the many aspects of this, one is to stretch the prospective short supplies of meat by far more general use of palatable meat-stretching dishes, and another is to facilitate the feeding of workers in the congested spots of which our Bay Area shipyards are only one example.

The cause for worry about the prospective situation is not, I think, so much that national health and efficiency must inevitably

suffer under shortages of protective foods as that the claims of various groups for what supplies there are may introduce elements of friction and ferment. The armed forces say they have to have a pound of meat per man per day. Already some labor leaders are arguing that their followers must have the same. The optimum-diet theory is used to prove the claims, and there is always a possibility that other groups may resort to it. There cannot be enough meat to satisfy each claimant. My conviction is that the claims are needlessly inflated, and that nutritional theory is largely responsible for this state of affairs. A retreat toward diets composed less of animal products and perishable fruits and vegetables, and more of cheap and abundant cereals, seems rather probable. It also seems to me not dangerous to national health and productivity. The task that government faces of leading the people to accept calmly and with good grace the necessary wartime adjustments of food consumption would be easier now, and would have been easier before, if peacetime nutritional theory had been somewhat more modest—and may I say scientifically objective?—in its claims concerning the gains in health obtainable from proper eating.

# FOOD WASTE IN DISTRIBUTION AND USE

WILLIAM KLING
*Food Distribution Administration*
*War Food Administration**

UNTIL recently, increasing the Nation's food supply to meet war needs has been regarded almost entirely as a production problem. The focal point for securing increased food production has been the farm. Truly, the farmer who plants and harvests a bushel of potatoes or wheat is the cornerstone of the physical process of production. Yet the size of our food supply is not entirely dependent on production. After the farmer produces food, the amount that reaches the consumer depends on the care taken in marketing and using it. Thus, maintaining a bushel of potatoes in sound condition after production may be considered equally as productive as the production of the potatoes. Every bushel of potatoes conserved that otherwise might be spoiled adds to the food supply of the Nation.

The 1943 food program anticipated a production increase of about three percent over 1942 production. This anticipated increase may be contrasted with the amount of food waste that ordinarily occurs after production. Such waste has been variously estimated at from 5 to 40 percent of production,[1] depending on the commodity in question. The Nutrition and Food Conservation Branch, Food Distribution Administration, estimates the over-all food wastage at 20–30 percent of all food production.[2] If any part of this waste is saved, an addition to the Nation's food supply has been made. The Food Distribution Administration is conducting campaigns to encourage consumers and handlers of food to reduce food waste to a minimum. Its program includes, among other activities, the dissemination of educational material on food conservation by way of

* The views and data presented in this article do not reflect the official position of the Food Distribution Administration. They are the expression of the author only.

[1] Asher Hobson and J. T. Horner, Waste, Breakage and Deterioration in Quality as an Element in Food Marketing Costs (Columbia University and the United States Bureau of Agricultural Economics cooperating, January 1924). J. A. Hyslop, Losses Occasioned by Insects, Mites and Ticks in the United States (United States Department of Agriculture, Bureau of Entomology and Plant Quarantine, July 1938). Stuart Chase, The Tragedy of Waste, 1925. New York Times, June 20, 1943. M. P. Rasmussen, F. A. Quitslund and E. W. Cake, Retail Outlets for Fruit in New York City (Farm Credit Administration, Bulletin 52, June 1941, pp. 57–59). National Livestock Loss Prevention Board, Wartime Waste in Marketing Livestock, 1942 report.

[2] Nutrition and Food Conservation Branch, Food Distribution Administration, Facts on Food Waste, September 1943.

the press, radio, civic and women's organizations, trade groups and other outlets. The object of these efforts is to save every savable bit of food. Most vital to any program of this kind are data on wastes in the various points in distribution and use. In the following discussion, some estimates of the amounts of food waste are ventured. These are not in complete agreement with other estimates made in the Department of Agriculture, but represent the preliminary, individual calculations of the author based on available data.

What is food waste? Two types may be described. First, there are the obvious wastes which involve the actual destruction or deterioration of food, i.e., absolute wastes. Second, there is waste in the relative sense, involving the use of food in ways which do not return a maximum quantity of balanced nutrients for human consumption.[3] Foods are utilized in this latter case, but not in ways which yield the most human nutritive value. In general, food waste may thus be defined as a less than maximum use of nutrients for human consumption. Stated another way, food waste is the destruction or deterioration of food or the use of crops, livestock and livestock products in ways which return relatively little human food value.

Food is wasted at every stage of distribution and use. With a critical food situation, a thorough examination of wastes should be made and every feasible means for prevention should be employed. In the following analysis, some wastes at the different points of distribution and use are described. The order of their presentation is more or less the usual sequence in which most food products move through the channels of distribution. This sequence is (1) the farm or other basic production source, (2) transportation, (3) storage, (4) processing, (5) wholesale markets and establishments, (6) the retail store, and (7) the consumer. These channels are not necessarily mutually exclusive and each step in distribution is not always followed in the order shown. For example, storage takes place on the farm or the farmer may retail direct to the consumer. To make the analysis more manageable, functions such as storage which occur at all stages of marketing will be considered separately and not repeated under each point in distribution.

### *Waste on the Farm and at Other Sources of Production*

Perhaps food waste on the farm and at other sources of produc-

[3] See William Kling, A Nutritional Guide to Wartime Use of Agricultural Resources, JOURNAL OF FARM ECONOMICS, August 1943.

tion such as on fishing vessels is as great as waste at any point in distribution. Farm and similar waste (after physical production has taken place) falls under three main categories:

1. Large quantities of food are unharvested or unmarketed because of insufficient outlets or low prices, because of low yields which discourage harvesting,[4] and sometimes because the farmer is just unaccustomed to selling his product. This type of waste is especially prevalent for fruits and vegetables milk, peanuts, fish and for those products which are produced in small quantities. Thus, because of low prices, one third of the Texas cabbage crop was unharvested in 1942 and left to rot in the fields. It is estimated that considerably greater quantities of sweet potatoes could be marketed if assembly facilities were improved. And if consumers could be induced to use types of fish that are caught along with the more valuable species but are now destroyed because of consumer non-acceptance, many millions of pounds could be added to the annual supply at little extra cost.
2. Inadequate facilities and methods of refrigeration, storage, packing and other practices cause considerable loss on farms. For example, at least three percent of the commercial sweet-potato crop is lost to decay, largely because of inadequate methods and facilities for farm storage. Some authorities place this loss as high as 15 percent. Such problems of inadequate practices and facilities, either chronic or occasioned by the war, recur in almost every phase of distribution. The general problem is difficult of solution during wartime, with existing material shortages, but priorities may be applied so that essential and perishable products receive first claim on materials and facilities.
3. Waste on the farm also occurs in the relative sense. Products are utilized in ways which do not give maximum returns as human food. Such "low value use" occurs in the diversion of food fit for human consumption to feed and fertilizer. Thus, three percent of the Irish potato crop is ordinarily fed to livestock, and 275,000,000 bushels of wheat were released by the

[4] Another form of waste which may be considered as occurring during the production process is the harvesting of crops before they achieve full maturity. This may result from the desire to get a high quality product such as young green peas, or to secure temporarily high prices.

Commodity Credit Corporation for use as animal feed as of June 1943. At least 25 percent of milk production in the form of skim milk is used for animal feed. Similar low value uses are made of most cereals, soybeans, peanuts, cowpeas, cottonseed and other products. Although some indirect return of food is secured by higher yields resulting from the use of fertilizer or from the animal products produced by feed, it is usually much less than the human food value itself of the products converted to fertilizer or feed. It should be noted that some quantities of "expensively" produced foods are needed for an adequate diet.

If one were obliged to estimate the amount of food wasted on farms, a conservative approximation would be at least nine percent. Possible remedies to prevent this waste include the improvement of local outlets and assembly facilities for farm products, price supports, Government purchases and subsidies where low returns discourage the marketing of food products. Governmental programs which encourage low value use of food such as the feed-wheat program, may need to be adjusted as well as grading programs which tend to encourage excessive culling. Where products glut the market or are situated unfavorably for ordinary marketing, facilities should be provided for processing or for distribution at low prices to low-income people.

### *Transportation*

Aside from the wastes that may be caused by inadequate transportation facilities due to the war situation, breakage and spoilage commonly occur in transportation as a result of inadequate practices of packing, loading, handling and ventilating; losses are especially prevalent for perishable and breakable products. One study showed that almost one percent of the Irish potatoes shipped from Maine to Boston in 100-pound bags were damaged in transit.[5] Examples of practices causing damage are bulk shipments, use of unsafe boxes, shipping of deteriorating food mixed with sound food and rough handling. Delays cause considerable food spoilage to perishables and are increased by cross hauling and similar unneces-

[5] Farm Credit Administration, Cooperative Research and Service Division in cooperation with the Agricultural Marketing Service and Maine Agricultural Experiment Station, Marketing Maine Potatoes. Damage in Selected Bags at Maine Shipping Points and in Boston Wholesale and Retail Markets, Miscellaneous Report No. 39, September 1941. p. 10.

sary shipment, which also aggravate the losses due to rough handling. Perhaps one percent of total volume would represent the loss of food in the transportation process. To conserve food wasted in transportation, a program could provide for safer containers, guidance in methods of safe packing and handling, and rules of care for truck and railway companies. The simplification and reduction of market movement such as by the reduction of cross haul shipments also would help reduce losses.

*Storage*

In a broad sense, storage occurs in almost every phase of distribution, whether it occurs on a retail shelf for a day or less or in a warehouse for a year or more. Loss in storage is a major source of waste and has at least three causes, sheer lack of adequate space, inadequate practices and techniques of storing, and lengthy storing. With an increased volume of agricultural production and various Government programs which require storage of food products, i.e., the loan program on grain and the "set aside" orders for canned vegetables, butter and other products, the problem of storage waste becomes increasingly important.

Inadequate techniques of stacking, of adjusting air conditions, of fumigation, spraying and handling rodents and other pests are among the chief causes of waste in storage. The extent of waste in storage due to insufficient control of insects for the grain crops alone is extremely great: "A five percent loss in grain storage due to insects other than the rice weevil is a very conservative figure. This would mean an annual loss, exclusive of the rice weevil, of $300,000,000."[6]

Although partly unavoidable, food losses are caused by storing food over long periods of time. The longer the storage period, the greater likelihood there is of deterioration. Moreover, many valuable nutrients are destroyed with lengthy storage. For example, about 70 percent of the ascorbic acid value of Irish potatoes is lost after six months' storage. Over-all waste in storage may amount to between one and two percent of total food production.

Possible ways of preventing storage losses involve, (1) disseminating knowledge and enforcing known methods of proper storage, (2) providing for adequate storage space by shifting products from

[6] Hyslop, *op. cit.*, p. 22.

areas of overcrowded facilities to areas with extra capacity, and by increasing the storage of products in the hands of final consumers such as by increasing the less than 20-day supply of feed ordinarily held by dairy farmers in the Northeast. Also making available for public use in extreme cases of shortage unused private storage space, or constructing new storage facilities, (3) providing priorities for the movement of products with the poorest storage facilities, and (4) stimulating market movement where necessary by programs such as the Victory Food Selection, by heavy Government purchases and by relief distribution.

*Processing*

Foods that are processed or are otherwise treated before consumption are subject to a number of losses, some of which are preventable. Because of inadequate facilities for rapid processing, perishable foods may deteriorate while waiting to be processed. They may also be spoiled during the processing operation itself by overcooking or other faulty preparation. Losses may be caused by methods of processing which do not retain the optimum vitamin or other nutritive value of a food. Thus it has been shown that different lots of tomato juice contain appreciably different quantities of ascorbic acid chiefly because of different ways of preparation. Another type of waste occurs when foods are prepared in ways which utilize only part of the nutritional value of the raw products such as in the case of white as opposed to whole wheat flour, and white and brown rice or sugar. In such processing, most of the B group of vitamins and many minerals are lost. Similarly, in the preparation of oils from peanuts, soybeans and cottonseed, the meal that remains after crushing is a highly nutritious protein food which has excellent properties as human food, yet is fed chiefly to livestock.

Most processing plants have operating losses such as those caused by spillage. These are partly unavoidable, but are aggravated by the duplication of processing facilities, especially where individual plant volumes are low compared with capacity. Many plants also do not adequately salvage all their byproducts, partly because of low volume which makes salvage operations unprofitable; inadequate salvage operations may be due also to ignorance of byproduct value; and even after salvaged, byproducts may be put to low value uses, such as feed. Recently, the black market has added to the waste of salvagable products in the meat industry since clandestine

slaughterers bother to market only the readily disposable parts of a carcass.

Another type of waste in processing is the preparation of adulterated and unclean food. In 1942, the Food and Drug Administration condemned products of 2,662 instances (mostly food) and ordered many of these products destroyed.

Waste in all phases of processing may amount to over four percent of our food production. Remedies that might reduce waste in processing include:

1. The provision of adequate facilities for rapid processing; by shifting raw products from overtaxed plants to those operating at less than capacity; by night operations; by shifting to alternative forms of processing which are not overtaxed and by the construction of new plants.
2. Discouraging methods of preparation which are destructive of food value such as the milling of white flour.
3. Encouraging high value uses for food such as peanut meal for human consumption.
4. Concentrating processing operations to include only needed plants.
5. Implementing salvage operations by subsidization or by Govmental collection of salvagable products.
6. Widening the system of inspection to assure purity of product.
7. Education in proper methods of processing and in the high use forms of food.

### *Wholesale Markets and Establishments*

Aside from the wastes described under storage above, the principal types of waste at the wholesale level of distribution are spoilage caused by insufficient movement of goods and improper handling. Insufficient movement involves the lengthy holding of goods, thereby encouraging overripening, and attack by disease and pests. It arises from prices which are too high to move a product rapidly, from gluts due to a large general supply, or from unequal distribution between markets. In addition, operating losses like "left-overs" take their toll. Local regulations against itinerant retailers, such as the pushcart peddler, who ordinarily salvage left-overs, tend to accentuate this type of waste. Also wasteful in the past has been consignment selling, which allowed retailers to return unsold products to wholesalers. It has been estimated that before the food order

prohibiting this practice was promulgated, large quantities of bread sold on consignment were returned, and in many cases fed to livestock or even destroyed. Although greater for perishable commodities, wholesale waste would amount to almost one percent of total food production.

Solutions to wastes at the wholesale level of marketing could include programs to move products rapidly into consumption by adjusting prices on products in danger of imminent deterioration; by gifts of excessive merchandise to charitable institutions (perhaps the latter practice could be coordinated by local market authorities); and by orderly marketing schemes and disposal of surpluses to low income families. The return option in consignment selling could be abolished.

### *Retail Establishments*

Waste in the retail store or other retail outlet has about the same general characteristics as at the wholesale level. Spoilage occasioned by improper storage or slow movement is a chief source of waste. In addition, spoilage and breakage result from consumer handling and from displays which expose food to sunlight, heat and rain. Slowness of movement is aggravated when prices are maintained on deteriorating merchandise so that good quality merchandise may not be undersold. Under the chain store system, which in many cases does not provide local managers with much price making power, price adjustments on deteriorating goods are difficult to make, thereby aggravating spoilage. A study of wastage of fruits and vegetables for a sample number of retail stores in Washington, D. C., during several summer weeks in 1940 indicated wastes as high as 15 percent for tomatoes, 12 percent for kale, 8 percent for cabbage and 14 percent for avocados.[7] For the entire retail operation, including less perishable items than fruits and vegetables, a conservative estimate of waste would be at least two to three percent of food production. Remedies similar to those for wholesale waste may be applied at the retail level. Planned buying by retail stores, tailored to meet needs, and a two-price system based on the imminence of deterioration would further improve

[7] Walter H. Stolting and Albert L. Meyers, Waste and Spoilage in the Marketing of Fruits and Vegetables for the Metropolitan Area of Washington, D. C. (United States Bureau of Agricultural Economics, June 1943). See also M. P. Rasmussen, F. A. Quitslund and E. W. Cake, Retail Outlets for Fruit in New York City, Farm Credit Administration, Bulletin 52, June 1941, pp. 57–58.

the situation. Chain stores could vest more price determining authority with their local managers. Sturdier containers could be used to prevent breakage for products such as those which are wrapped in cellophane.

*The Consumer*

With the exception of farm waste, more food waste probably occurs at the consumer level than at any other level. Consumer waste is caused by: (1) overbuying and hoarding with resultant deterioration; (2) poor selection of food such as by the purchase of excess calories and not enough vitamins; (3) by discarding cooking juices, fat and other food parts with nutritional value, i.e., skins, outer leaves and tops of vegetables, (Beet tops have more nutritional value than beet root, yet are often discarded); (4) by poor methods of preparation: in ways that do not retain food value, in unpalatable ways and by burning and spilling. For example, cabbage which is cooked 10 minutes has 62 percent more ascorbic acid than cabbage cooked 60 minutes; (5) by adhering to certain restrictions of table etiquette which advise against eating the last bit and similar practices, thus increasing the amount of edible left-overs on consumer plates; (6) by preparing too much and discarding left-over food; (7) by feeding certain essential foods to pets; (8) by the non-use of garbage which could be fed to hogs.

Most of the wastes noted above, especially under item (6), also apply with some modification to the use of food by the Armed Forces and institutions.[8] Over-all waste at the consumer level probably amounts to about five percent of production. The estimates of the Nutrition and Food Conservation Branch place this figure at 15 percent of food purchased by the housewife.

Most important as a remedy of consumer waste of food is education in its proper use. Education can take the form of a campaign to get maximum use of food by such devices as the "Clean Plate Club," and by instruction in the proper preparation of foods, and the use of left-overs and parts ordinarily discarded. Rationing may serve to prevent the wastes of overbuying and hoarding. Foods of low nutritional value may be made less readily available by reducing their production; production of foods with high nutritional value could be increased. The rules of etiquette may be modified

[8] See Paul E. Howe, The Dietaries of Our Military Forces, Annals American Academy of Political and Social Science, January 1943, p. 78.

to assure more complete food use. And where the public health is not endangered, garbage could be fed to hogs.

*Over-all Considerations*

In a broad sense, food is wasted whenever it is consumed so that its marginal utility to different consumers is unequal. Food may be considered as not fully utilized if it is used to satiate some people beyond their food requirements, while large sections of the population are undernourished. Such inequities are minimized by rationing and by programs to feed low income families.

Certain monopolistic practices also minimize the full use of food. These practices may take a regional form by regulations which hamper the local use of food produced in other States and areas.[9] Local regulations excluding "foreign" fluid milk from some markets is an example. Regulations are also wasteful that make for the less efficient use of food by discouraging the consumption of commodities (such as margarine) which would alleviate shortage conditions.[10] Actual curtailment of food production or supply by monopoly also contributes to waste. The problem of monopoly has been fully discussed elsewhere. Any consideration of monopoly reform should recognize the effects of monopolistic control of supply where it contributes to food waste.

Governmental regulations may, in some cases, cause food waste. Where controls on food are not flexible, strict adherence to the regulations may result in waste. For example, "set aside" orders requiring that a portion of a crop be reserved for processing may cause deterioration if processing facilities are not immediately available. Price support programs which maintain prices at a higher level than the equilibrium price create surpluses which may be difficult to dispose of. This was the case with the 1943 intermediate Irish potato crop. Finally, in past years, actual curtailment of food production and food marketings has contributed to food wastage. To avoid these losses, Governmental regulations should be made flexible enough to provide for exceptions in cases where food waste may be caused by adherence to the regulations. Price support programs should be supplemented by programs to dispose of the sur-

[9] G. R. Taylor, E. L. Burtis and F. V. Waugh, Barriers to Internal Trade in Farm Products, Special Report, U. S. Department of Agriculture, Bureau of Agricultural Economics, 1939.

[10] Marketing Laws Survey, Los Angeles Project, Department of Commerce, State Oleomargarine Legislation, 1942.

TABLE 1.—ESTIMATED PERCENTAGE WASTE OF DIFFERENT COMMODITY GROUPS IN DIFFERENT STAGES OF DISTRIBUTION AND USE
(These data are tentative estimates that are based on rather incomplete factual information. They are preliminary and unofficial.)

| Commodity Groups | The Farm (After physical production) | Transportation | Storage | Processing | Wholesale | Retail | Consumer | Total |
|---|---|---|---|---|---|---|---|---|
| | *percent* | *percent* | *percent* | *percent* | *percent* | *percent* | *percent* | *percent* |
| Dairy products | 17.5[1] | 0.3 | * | 1.0[1] | * | 0.25 | 1.5 | 20.55 |
| Meat, poultry and fish | 1.5[2] | 0.3 | 0.5 | 2.5 | 1.0 | 1.5 | 7.0 | 14.30 |
| Eggs | 1.0 | 1.0 | 0.5 | * | 0.25 | 0.25 | 1.0 | 4.00 |
| Potatoes | 7.0 | 1.0 | 5.0 | 1.0 | 1.0 | 3.0 | 10.0 | 28.00 |
| Dry legumes and nuts | 9.0 | * | 5.0 | 34.0 | * | 0.25 | 2.0 | 50.25 |
| Tomatoes and citrus fruits | 7.0 | 3.0 | 2.0 | 5.0 | 2.0 | 8.0 | 6.0 | 33.00 |
| Leafy, green and yellow vegetables | 12.5 | 3.0 | 1.0 | 5.0 | 2.0 | 7.0 | 12.5 | 43.00 |
| Other vegetables | 8.0 | 2.0 | 1.0 | 5.0 | 1.0 | 4.0 | 8.0 | 29.00 |
| Deciduous fruits | 8.0 | 3.0 | 1.0 | 3.0 | 1.0 | 7.0 | 3.0 | 26.00 |
| Cereals and flour[3] | 13.0 | * | 4.0 | 14.0 | 1.5 | 1.5 | 5.0 | 39.00 |
| Sugar and sirup | 1.0 | * | * | 1.0 | * | * | 2.0 | 4.00 |
| Butter and fats | 1.0 | * | * | 0.5 | * | * | 5.0 | 6.50 |
| Coffee, tea, chocolate and spices | — | * | 1.0 | 1.0 | * | * | 5.0 | 7.00 |
| All foods[4] | 9.1 | 0.9 | 1.5 | 4.3 | 0.8 | 2.4 | 4.7[5] | 23.70 |

[1] Quantities of dry skim milk used for feed on farms are included only at the farm level and not at the processing level.
[2] Includes waste on fishing vessels.
[3] Excluding grains used for feed with the exception of wheat.
[4] Weighted by the average per capita consumption of different commodity groups in the period 1936–41.
[5] Estimated at 15 percent of food purchased by the housewife by the Nutrition and Food Conservation Branch, Food Distribution Administration.
* Less than 0.25 percent.
Note: Where relative wastes occur in the form of feeding humanly edible food to livestock, a net waste was computed by making allowance for the livestock products produced by the feed. Grains fed to livestock, with the exception of wheat, were not considered as being wasted.

plus products to people who need additional food. And, in light of the nutritional needs of the Nation, curtailment of food production and food marketings should be employed only in extreme cases.

Finally, existing shortages of labor and equipment contribute to the spoilage of food at every stage of distribution and use. This problem, of course, is part of the larger war problem involving shortage conditions in almost all fields of production. Every effort should be made to conserve food already produced by securing necessary priorities on equipment and labor, but these needs must be balanced against the needs of other sections of the economy. Foods in greatest danger of deterioration and which are most essential should have first claim on facilities.

### *What Is The Food Waste Bill?*

The wastes occurring in the different stages of distribution have been outlined above, and rough percentage estimates of their size in relation to total production have been ventured. These estimates are summed up in Table I.

The rough estimates in Table I add to a waste bill amounting to almost 24 percent of production. Even if these estimates have a 50 percent error of overestimation, and the author believes that perhaps the error is on the side of underestimation, they are of tremendous significance. They indicate that more food is wasted than is consumed by our Armed Forces and Lend-Lease shipments. Waste is much greater than any feasible increase of food production in 1943 or 1944. Every bit of food ordinarily wasted which is conserved is the equivalent of so much production. Although it is true that only a part of the estimated total food waste is recoverable, conservation of only a portion could probably add more to the Nation's food supply at the present time than any other program. In this time of need, the Nation may well again practice the prudence of its forebears.

# HYPOTHESES IN LAND TENURE RESEARCH*

OTIS DURANT DUNCAN
*Oklahoma Agricultural and Mechanical College*

THE GENERAL purpose and the chief problem of this paper is to formulate several major hypotheses which may be used to guide investigations of the facts, conditions, and fundamental relationships in land tenure. The paper assumes a widespread interest on the part of rural social scientists in land tenure research. It assumes, also, that after the war, one of the biggest social problems of agriculture for years to come will be that of adapting human and land resources to each other in ways consistent with fundamental economic and sociological principles. It assumes that basically, rural social scientists regard the land tenure system as the agricultural institution which, next to the farm family, most completely expresses and reflects the dominant social, economic, and political values characteristic of rural life in America. Lastly, it assumes that all important questions of pertinence to land tenure will be answered in terms of the best judgments which may be derived from the most objective expert knowledge the social scientists of this country can produce. Before proceeding to the principal task of the paper, however, several subordinate and auxiliary points must be disposed of in order to provide a proper setting for the questions to be raised.

Existing knowledge of the fundamental principles pertaining to land tenure is subjected to bias, misinterpretation, and misapplication because of the failure of social scientists to conceptualize and to generalize the meaning of those facts in terms of common understanding. For example, the definition of a farm has not been established, objectively, definitely, and conclusively; there is no known achievement which makes a farmer unquestionably an owner or a tenant; the border line between laborers and tenants is veiled in a fog of confusion; and a farmer buying land on borrowed capital is called an owner while one who owns his operating capital but rents land is called a tenant. There are many forms of confusion like

* This is a revision of a paper read at the meeting of the Southwestern Land Tenure Research Conference in Stillwater, Oklahoma on June 15–16, 1943. The critical suggestions of the writer's colleagues, Wm. H. Sewell, Robert T. McMillan, and Wm. L. Kolb were of immense value in the preparation of this paper as were also those of the entire membership of the Southwestern Land Tenure Research Committee.

these which grow out of a lack of common understanding of terminology.

In view of the need for a more general understanding of terms, the first specific problem of this paper is to set forth the meaning of certain concepts which have common use in tenure research as clearly as possible. *Tenure* is to be understood primarily as the act of holding, occupying, and/or the right of using land. Secondarily, it may refer also to the duration of occupancy. Under it are subsumed the privileges, including specifically that of *using wealth*, obligations, prerogatives, immunities, enfranchisements, and disabilities exercised by or imposed upon one who occupies or uses land during the period of his occupancy.[1] A *tenant* is a person who occupies land usually not his own under stated conditions for any period of time. *Tenancy* is to be understood as a mode of holding land which actually or nominally belongs to another, or upon which any other person or persons may have a prior claim. For practical uses, tenancy applies to the method of holding land by one who is not its owner, and who must pay any form or amount of rent for a limited time. *Tenantry* is the class of people who are tenants. A *system of tenure* refers to an overall tenure pattern having special reference to the distribution of land holding rights and

---

[1] In a personal letter dated September 14, 1943, Professor John D. Black offers the following explanatory comments on this point which are significant. He says, "The conclusion which I have reached is that the best definition of tenure is the 'right to the use of land.' The rights to the use of land vary greatly in complexion. I would say that the public has certain important rights to the use of land still held under private ownership. It can take possession of it through the right of eminent domain; it can tax it; it can regulate its use in the public interest; it can lay out a road over it; it can travel over it in an airplane. It can walk over it except for certain specific prohibitions. In some European countries the rights of the public are still more extensive, such as to gather waste fuel upon it.

"The laborer working under a contract, oral or written, with a farmer has certain additional rights not enjoyed by the public. A share cropper is a type of laborer who has a still larger 'bundle of rights.' A definition such as I have suggested, therefore, avoids all the difficulties over the cropper status."

This brings out in some detail the substance of what is implied in the definition as stated in the text of the discussion. Professor Black's contention is tantamount with saying that in some way every person has a tenure status because everyone makes use of land and has certain rights of use, even if his rights are only to walk upon it. Generally, it is conceded that the public retains three fundamental rights in land, by whomever it may be owned. These are (1) the right to tax, (2) the right to police, and (3) the right to condemn, or the right of eminent domain. In some societies the public may also retain the right to allocate land periodically for private use, its ownership being held by the State.

The importance of this is that no individual has an absolute right to the use of land, and that differences in the tenure status of two or more individuals can be expressed in terms of the *size* and the *nature* of the "bundle of rights" each has in the land he uses, occupies, or controls.

to uses of certain other forms of wealth as it has evolved in a given geographical area. A *form of tenure* has reference to a level or grade of tenure within a system or pattern of tenure, such as laborer, share cropper, tenant, owner, or even the general public which may exercise only control over land and those who use it for productive purposes.

Is there a standard tenure system in this country? In the sense of a rigid uniform system, comparable to that of marking highways or of railroad semaphores, for example, there is not. In the sense of a flexible, basically similar, complex of tenure there is a general overall tenure system. The local or regional peculiarities which are perceptible in tenure are not variations in kind as much as in degree. The several tenure levels exist almost everywhere. In some instances tenure mobility is slow and in others it is more rapid. In some areas there are large outlets into occupations which compete with agriculture for labor while in other sections of the country these outlets are small. Share rent, for illustration, is a feature of tenure which may appear anywhere, but its contract, or customary, rate may be one-third in one area and two-fifths of the product in another, with landlords and tenants supplying about the same functions in both cases. The presence of exceptions in different localities does not destroy the existence of a general tenure pattern.

There are two general kinds of occupiers of land, those who own it and those who do not. Within each of these two main categories there are as many subcategories as custom and practice may have determined in each locality. Potentially, the number of kinds of owners and nonowners is unlimited, although practical considerations actually impose limits within given systems of land administration. The *kind of owner* one is depends upon his equity in the land owned and the privileges and obligations conferred upon him by the sovereign power which grants and protects his title to land. The *kind of tenant* one is depends upon the peculiarities of his contractual relations both formal and informal with his landlord and with the community in reference to the land he occupies.

The second special problem undertaken here is that of formulating a conception of the structural and functional relationships of a tenure system as a process or mechanism of adjustment, adaptation, of accommodation, or of organization. That is to say, the system must be studied as a resultant of the interaction of causative and limiting forces which exist in the socioeconomic milieu. A

tenure system is an arrangement whereby occupants of land are invested with definite rights, privileges, duties, immunities, and obligations pertaining to its use in respect to particular parcels of land occupied and certain other forms of wealth the uses of which are contingent upon landholding. This arrangement is a product of forces working in time, and its survival depends upon the tests of human experience and values applied to it. There is no predetermined ideal or normative system of tenure, except as previous experience serves as a pattern for the future, because there are no known and accepted criteria by which such an ideal system can be defined and set up.

The real problem in land tenure research is to find out the underlying causes, the characteristics of performance, the conditions of operation, the results, and the survival features of the existing system. Regardless of any apparent iniquities which may seem to exist in a particular tenure pattern, there is always at least one reason for its persistence which is of greater moment than all others to the contrary. For example, the plantation system of the South could not have survived as long as it has if there had not been some feature, or features, about it which outweighed all other considerations to both the landowning and the cropper classes. Moreover, it is safe to say that when this reason ceases to be operative, the plantation will perish. Sometimes a tenure system may rise, flourish, and decline without its basis having been fully recognized. Thus far, no one has discovered the real reason why the plantation survives except in its most generalized form, and it may never be known, although this might be a legitimate field of research.

The third subordinate problem of the paper is to distinguish a research problem from a social problem. A research problem exists when a question of cause and effect, of relationship, of verification, of application, or of generalization is involved, and is designed to test the validity of a supposition, or of a proposition. Such a proposition or supposition is called an hypothesis, and may be likened to a theorem which is believed to be true and generally applicable but which cannot be accepted until it has been subjected to adequate proof. Basically, a research problem involves the objective description of existential phenomena. In its more highly developed form it includes the analysis of existing relationships within some framework of cause and effect, and is usually so stated that it implies the testing of an hypothesis in the light of superior knowledge

gained through research. On the other hand a social problem exists when there is a serious conflict of ideas, beliefs, values, and patterns of overt behavior within society in reference to matters of policy. All social problems may be regarded as problems or objects of research but they must be restated in terms of research problems before scientific knowledge can be obtained regarding them. That is to say, a research problem is intended to discover truth and to demonstrate its applications and uses while a social problem is an issue on which a reform is being sought. This is an important and necessary distinction which, when not taken into account in research, is more likely to add confusion than clarification. Unfortunately, it is not always recognized by social scientists.

The fourth preliminary problem of the paper is to define an hypothesis. Every research problem presupposes either an expressed or an implied hypothesis. It must accept certain known facts or evidences from which, when they are logically related to each other, new truths may be discovered. It must admit certain probabilities, which, though unproved, may be essential as predetermining conditions in the establishment of principles or laws. One can seldom recognize and identify all the possible factors which contribute toward a given manifestation of relationships, and must concede, therefore, any probability which is not inherently antithetical and antagonistic toward the establishment of the principle sought. In research, imagination, not being subject to the physical limitations of time and space, may often perform a vital role toward the confirmation of principles which cannot be established by facts observable only through the five human senses.

Logically, one will want to know what is an hypothesis. In general, an hypothesis is a statement of a tentative theory or supposition as to the existence of some cause-effect relationship adopted to serve provisionally as a guide to investigation leading to its final verification, or establishment, as a principle or law. It is a manifestation of the tendency of the human mind to relate suppositions and probabilities to known existential phenomena. Specifically, as used in research, an hypothesis is the most likely explanation of the relationship existing between a given fact and other facts or conditions which may be observed. Ultimately, therefore, *an hypothesis is a tentative statement of a likely relationship between phenomena which, if verified under specific conditions, may be set forth as a*

*principle or law applicable to any situation under which the specified conditions are present.*

All social science research must begin with an hypothesis about which revolve all the manipulations and analyses of the data believed to contain the verification sought. Hypotheses are stated as general facts regarded as supportable by observation and investigation. To say "All other things being held constant, the efficiency of the management of farms varies according to different levels of tenure of operators" is to state an hypothesis. It is known that some degree of efficiency or inefficiency exists on all farms, that all farm operators and users of farm land have tenure status, and that there are other factors besides tenure which are supposed to affect efficiency of management but which, in this case, must be held constant so that changes in efficiency can be measured against differences in tenure status. If, when this is done, it should be found either that efficiency varies with tenure, or that it does not correlate with tenure in any way, the hypothesis has been tested. The test of an hypothesis is not that an answer which agrees with the supposition, but that the truth or the degree of truth inherent in it, has been discovered. It is in this spirit that the following tenure hypotheses have been stated and in which verifications of them must be sought.[2]

### *Hypotheses of Tenure Research*

The major problem at hand is to set forth several hypotheses for the guidance of tenure research. This is to take only the first of three steps in a scientific procedure: (1) formulation of the hypothesis, (2) the description of a method by which it may be tested successfully, and (3) the demonstration of the test. Because of limits of space this paper is restricted to the first step. Its maximum benefit to research will have been achieved only when all three steps have been completed. These hypotheses are formulated in the belief that they are amenable to scientific testing, although it is recognized that in certain instances the testing process might be difficult. The list is not exhaustive and it may seem to lack sequence and logical order. An attempt is made, however, to provoke further

[2] See Otis Durant Duncan, A Sociological Approach to Farm Tenancy Research, *Rural Sociology*, Vol. 5, No. 3, Sept. 1940, pp. 285–291, where are set forth fifteen hypotheses relating directly to sociological research in farm tenancy as a special form of land tenure.

thought and investigation rather than to bring forth conclusions.[3]

*First.* Land tenure is a complex of institutional relationships applying to all occupants or users of land, the landowner whoever he may be, the community in which the land is located and which is the ultimate source of control over it, and to the land itself.

*Second.* Other factors being constant, the differences between tenure systems, or forms of tenure within the same system, are commensurate with the element of security inherent therein.

*Third.* Assuming the persistence of the institution of private property, and the absence of social or legal barriers, freedom and individual success of farmers of equal ability vary with position on the "agricultural ladder" whereby status is established through periods of service in various levels of tenure.

*Fourth.* Other factors remaining the same, in a maturely-developed community where private ownership prevails with free land exhausted, land tenure becomes increasingly a manifestation of family identity as population pressure mounts. Land titles tend to become hereditary, and there are growing restrictions on the occupancy of land in any manner. The socially sanctioned relationships of men in reference to land tend to become ethnic in origin.

*Fifth.* Assuming that proferred assistance is compensated for by increased obligations on the part of recipients, government regulation or control of agricultural production tends to immobilize tenure groups after reducing them to a common status and to render impossible the adjustment of human to land resources through the usual channels in proportion to the extent of its control.

*Sixth.* Assuming that, in societies in which it is operative, the agricultural ladder facilitates the *vertical* movement of farmers from one tenure or economic level to another, it is likewise a factor which expedites *horizontal* movements or shifting of position within a given tenure level in socioeconomic space, and the horizontal movement is, therefore, a correlative of the vertical.

*Seventh.* Tenure form being fundamentally an expression of a specific type of contractual relationship between occupant and community in respect to land, it follows that the tenure contract itself is a prime factor in determining the operation of the tenure system as a whole. Therefore, the objective position of the occupant of land is determined by the organic and functional character of the contract.

*Eighth.* Other factors being considered equal, the economic efficiency of operation and management of farm units is directly a function of tenure differences.

*Ninth.* Other factors, such as the level of living maintained and produc-

[3] Lest it be misunderstood as constituting a prejudicial attempt to establish the hypotheses stated, no explanation is made as to why it is thought than an hypothesis exists in each instance. Previous study and experience lead to the belief that each of these statements is an hypothesis as defined in this paper and represents a distinct research problem which can be tested by scientific methods and procedures.

tive efficiency per unit of product, remaining constant, the optimum socio-economic adjustment of land to human requirements of the farm family is a direct function of the tenure system.

*Tenth.* Since time is a prime determinant of tenure of land, if economic and personality factors are held constant, tenure status will bear a functional relationship toward the number of territorial moves and the number of occupational shifts made by a farmer per unit of time.

*Eleventh.* Other factors being constant, tenure status will be determined by the cultural milieu in which the nurture and rearing of farmers takes place, and its explanation will be facilitated further through an analysis of the factors responsible for the cultural situation.

*Twelfth.* Assuming the continuation of private property, private enterprise, and an open class structure in society, there is an optimum proportion of different classes or grades of tenure in the agricultural economy upon the maintenance of which depends an unimpaired functioning of social metabolism and division of labor.

*Thirteenth.* Other factors in farming being the same, the costs incident to risks, management, interest, taxes, depreciation, capital accumulation, and other fixed charges in agriculture are distributed operationally through the tenure system.

*Fourteenth.* Assuming an absence of external interference, organic social solidarity (division of labor) primarily and mechanistic social solidarity (mutual attractions of classes of people to each other) secondarily in the farm community are directly related to the tenure system and its operation.

*Fifteenth.* If the tenure system is functionally related to differentiation and stratification in society, the social, economic, and political attitudes and overt behavior of farmers will vary according to tenure status: (a) in an open class society without perceptible tendencies toward radicalism or revolution; (b) in a closed class society with pronounced tendencies toward radicalism and revolution.

*Sixteenth.* Assuming a constant state of the arts, of trade, and of productivity per unit of land, the size and the quality of population a country can support on an acceptable level of living will be dependent upon its system of land holding and of land distribution.

*Seventeenth.* This hypothesis is twofold: (a) Quantitative and qualitative characteristics of the population being held constant, the proportion of farms operated under different types of tenure will vary according to the political, economic, and social conditions prevailing; and (b) The politico-economic, and social conditions being constant, the proportions of farms operated under different types of tenure will vary according to the qualitative and quantitative characteristics of the population.

*Eighteenth.* To the extent that land tenure status is synonymous with or expressive of socioeconomic status in agricultural society, it is a determinant of social participation, assuming equal qualities of population.

*Nineteenth.* Ability to provide them being constant, the tenure status of individuals is an immediate correlative of standard of living, education, health, esthetic and spiritual values of a population.

*Twentieth.* In so far as the tenure system is not an open-class system, tenure status is a factor which tends to inhibit farmers in the lower and to adhibit those in the higher economic levels in the further accumulation of wealth without respect to the personal qualities and managerial ability of the farmer himself.

### *Conclusion*

Probably, it is impossible to conceptualize all the possible aspects of land tenure which have significance. This is true especially in reference to details and specific hypotheses. The object of this paper has been to state in general terms certain propositions, or hypotheses, which seem capable of supporting the total superstructure of land tenure research. Purposely, there are innumerable specifications to which no attention has been given. Certainly, it would be a superhuman task to try to anticipate all the possible individual applications of problems which may arise in land tenure. On the other hand, it is well within the range of possibility to organize in the broader sense the total scope of land tenure in such a way as to provide nurture for the study of any particular problem. Such has been the ambition of this paper. Whether or not this objective has been achieved is an open question, although there is no doubt that such an accomplishment is a possibility if it is attempted by reasonable competence.

# NOTES

## A DISCUSSION OF "FOOD PRODUCTION POLICIES IN WARTIME" BY SHERMAN E. JOHNSON*

DR. JOHNSON'S well-balanced presentation has given us a broad picture of the problems of wartime food production including a review of essential food needs and available productive resources. In view of the time limits allotted for discussion, it appears desirable to concentrate on that portion of the paper which deals with public production policies proper. Only a short remark may be permitted with respect to the concept of "maximum production capacity" because of its bearing on questions of policy.

Maximum food production in physical terms has economic meaning only if the productive services employed in agriculture were fixed and if food output could be measured by one common denominator, for instance, by calories. Actually, productive services employed in agriculture may be varied by shifting services between agricultural and nonagricultural industries, or even between countries—importation of labor from Mexico, for instance—and by depleting durable productive services (soils, buildings, equipment) at present used in agriculture. Food output, furthermore shows great qualitative differences with respect to dietary functions, culturally determined requirements of consumers, demands of lend-lease, burden on the transportation system, and others. Thus, maximum productive capacity can be understood merely as a goal which is qualitatively, as well as quantitatively flexible, which may represent upward as well as downward changes from some historical base, and which is dependent upon a set of very specific assumptions.

In peacetime the goal itself—in this case satisfaction of free consumer's choice—and the employment of productive services to obtain the goal are mutually determined through the price system in such a way that the marginal value product of services is equal to their marginal unit costs in all employments. In wartime, changes of demand are so great and so sudden that reliance on the price system alone to bring about shifts in employment of services would lead to socially undesirable effects in the field of consumption. The

* Presented at the Annual Meeting of the Western Farm Economics Association at Berkeley, California, June 24, 25, 26, 1943. The manuscript of this note arrived too late for publication with the paper which is being discussed. The reader may wish to refer to the latter which was published in the preceding issue of this journal.

two main causes are, first, existing inequalities in the income distribution and second, imperfect adaptability of productive services. Consumption goals are therefore determined by public policy. Price regulation of consumption goods and rationing are necessary consequences. The question arises whether the same causes or merely the existence of price regulation and rationing in the field of consumption prevents the functioning of the price system in the field of production.

Regulation of consumer's prices requires regulation of producer's prices in order to bring consumption and production into balance. Production policy in wartime is largely concerned with the management of this double or multiple price system and its relation to more direct production controls through subsidies, penalties, production contracts, and allocation of productive services or production quotas. Thus far we are in agreement with Dr. Johnson's conclusion regarding uncontrolled prices. What follows will be concerned with the management of a controlled price system and its relation to more direct measures of production policy.

It may be noted first that controlled producer's prices do not appear effective in obtaining production goals if it is desired to increase over-all agricultural production by shifting productive services employed in other industries into agriculture. Allocation of manpower, equipment and raw materials is determined by military needs and a rigorous system of priorities. Under these conditions an over-all increase of agricultural prices would have little effect upon shifts of services, but would merely lead to rapid and excessive price increases of these services. A controlled system of producer's prices must, therefore, be mainly concerned with the price *ratios* between different agricultural products and between agricultural products and those productive services which are mainly employed in agriculture. These are especially protein feed, fertilizer, and agricultural machinery. To guarantee and to modify price *ratios* in order to bring about shifts of productive services within agriculture in accordance with production goals appears as the most important task of food production policy in wartime.

Secondly, it may be noted that guaranteed price ratios may not be sufficient to bring about shifts within the desired time interval if imperfect knowledge of managers and imperfect adaptability of productive services for technological and institutional reasons act as brakes. It must be remembered that in all so-called instanta-

neous concepts, such as supply schedules, elasticity of supply, elasticity of substitution and elasticity of productivity, a time dimension in terms of clock time is implicit. However, the elasticity of substitution of individual products and productive services within farms and farming regions is generally quite considerable and can proceed in relatively short periods of time.

This is particularly true for that shift which rightly plays an important role in Dr. Johnson's paper, namely, the shift of production for final consumption from animal to vegetable calories and proteins. Let us assume that such a shift is feasible on the consumption side and desirable in view of the great transformation losses of calories and proteins in feeding operations. It appears then that past and present price ratios established by the government through price ceilings and support prices have influenced and are influencing production in a direction opposite to that which is desired. Moreover, these price ratios have tended to make feeding operations much less efficient. Hogs have recently been slaughtered at materially heavier average weights than last year, and beef cattle production has expanded absolutely and relatively much more in the Central and Western Corn Belt States, where the feed basis is corn and small grain, than in the Range States.[1] Hogs and beef fattened on grain compete directly with human consumption of calories and proteins. It is also well known that the efficiency of hog feeding decreases with increasing weight and that beef cattle are particularly inefficient transformers of calories and proteins.

Another aspect of the control of price ratios as a part of public production policy deserves attention in this connection. This is the cyclical and seasonal character of livestock production which is so closely related to feed / product price ratios. In looking back over the last decade, it appears that governmental action has nearly always increased the violence of the livestock cycles because action came too late or was taken without consideration of the cyclical character of agricultural production. There is reason to believe that this holds also for the present and the future. During the last year

[1] Compare: U. S. Department of Agriculture, The national food situation, May 1943. And: U. S. Department of Agriculture, The agricultural situation, April and May 1943. Also: New York State College of Agriculture, Farm Economics, April 1943. The increase in the number of beef cattle by January 1, 1943 in percent of 1938–1943 was 14 percent for the Western States plus Oklahoma and Texas, 26 percent for Corn Belt States east of the Mississippi, and 46 percent for Corn Belt States west of the Mississippi. Absolutely the increase in the first group of states was 2.0 million head, in the second 0.7 million, and in the third, 4.2 million.

low price ceilings on feed and high ceilings or support prices on livestock have accentuated the upswing of the beef cattle and hog cycles. It seems probable that the downward phase of the cattle cycle would, in any event, begin this fall and of the hog cycle next spring. Government action in the next months will probably be in the same direction and if, by chance, the feed harvest this year should be below average, the liquidation of herds may proceed farther than is desirable. The need for seasonal modification of existing price ceilings on feeds and livestock products is too obvious to need any argument.

Besides grain / livestock price ratios, the skim milk / hog and whole milk / calf price ratios—the latter particularly because of the different labor requirements of the two products—may need attention in the near future. If present price ratios persist, we may soon have milk going into livestock rather than into drying plants for lend-lease and into direct human consumption.

Other important ratios are those among protein feed prices and livestock prices and fertilizer prices and crop prices. Protein feeds and fertilizers cannot be used for human consumption directly and can be shifted relatively easily from one product, region, or farm to another. For this reason their allocation may well be left to economic forces provided the price ratios for the final products are set in accordance with production goals. Present production policy has not taken this course. Low ceilings on protein feed prices have led to waste of protein feed and to serious local "shortages."

These so-called shortages lead us to the relation between a controlled price system and more direct forms of allocation of productive services. Dr. Johnson believes that production quotas are not needed in this country and that support prices supplemented by subsidies, insurance without premiums—which is merely a special form of "subsidy"—and possibly production contracts will be sufficient. If the present policy of low ceiling prices on productive services persists, it is difficult to see how waste and shortages can be avoided without direct allocation. Ceiling prices on productive services without allocation are no more feasible than ceiling prices on consumption goods without rationing. The difference between allocation of productive services and allocation of production quotas does not seem very significant. This is, of course, economically speaking. As a matter of political expediency production quotas may be disguised through allocation of productive services or

through production contracts with strong pressure for participation and penalties for nonfulfillment, and in other ways.

The more direct measures of production policy such as subsidies, contracts, and allocations make it possible to deal with individual farms or at least with a number of farms grouped on a regional and type-of-farming basis. The advantage of this procedure is that *marginal* costs-of-production increases could be taken into account. The disadvantages are higher administrative costs, which may not be too serious in view of the existing administrative apparatus of the Agricultural Adjustment Administration, and the danger that productive services are wasted in inefficient producing units.

In the latter connection it is of interest to note that Dr. Johnson expects great production increases on those farms and in those regions where chronic underemployment of family labor is believed to exist, though he qualifies this point somewhat. The same point however, occurs in more extreme form in several recent articles in this journal.[2] A production policy is advocated which would allocate feed, fertilizer, equipment, and supplies, to farms and regions where family labor is underemployed or inefficiently employed. This suggestion may be analyzed somewhat further.

On the basis of recent United States Department of Agriculture figures of agricultural employment, it seems doubtful whether much underemployment of family labor still exists. Between April 1940 and April 1943 actual or potential farm workers decreased by 4.2 million. In spite of this loss, total farm employment in the first quarter of this year was only about 1 million less. If the figures can be trusted, it must be concluded that previously nonworking farm people, particularly women, older men, and boys, took a more active part in farming operations. Regardless of whether these conclusions are correct, some questions may be raised with respect to the soundness of the above policy. It is true that underemployment of family labor means, largely, inability to obtain sufficient amounts of cooperating productive services. However, such inability is usually caused by factors which make the farm an inefficient producer, not necessarily from the standpoint of providing a living for the

[2] Rainer Schickele, Obstacles to Agricultural Production Expansion. JOURNAL OF FARM ECONOMICS XXIV, No. 2. May 1942. G. W. Forester, Contribution of Farm Management Research to Attainment of Productive Goals, JOURNAL OF FARM ECONOMICS XXV, No. 1. February 1943. Dr. Forster cites in support the article of Robert W. Rudd and David L. MacFarlane, The Scale of Operations in Agriculture, JOURNAL OF FARM ECONOMICS XXIV, No. 2. May 1942.

farm family, but from the standpoint of providing a commercial, salable output. The most common of these factors is small size in combination with poor and depleted soils, difficult topography, and hazardous climate. These factors cannot be changed quickly. War production policy is concerned with increasing the commercial output of agriculture and not with improving living conditions on self-sufficient farms. The latter is doubtless desirable, but should not be confused with the former. Productive services such as feed, fertilizer, and equipment should be allocated to those farms where the marginal product in terms of salable essential (as indicated by goals) output is greatest. These farms are not likely those in which family labor is believed underemployed. Furthermore, the present may be a good time to solve the problem of chronic underemployment in certain agricultural areas by moving people permanently to areas with better agricultural resources or into industrial employment. This movement seems already under way in sections of California.

By way of summary it may be stated first, that public production policy in wartime should give more attention to the management of price *ratios* rather than absolute prices, and should anticipate rather than lag behind cyclical and seasonal changes in production. Second, allocation of productive services should be left as far as possible to economic forces and the fact should be boldly faced that ceiling prices on productive services without allocation must lead to waste and shortages with economic repercussions much more undesirable than "natural" price increases of those services. Third, in supplementing a controlled price system by direct measures on a more individual basis, care should be taken that productive services are allocated to those farms or groups of farms where marginal productivity in terms of salable essential output is greatest.

S. V. CIRIACY-WANTRUP

*University of California*

## CROP YIELD INDEX NUMBERS—SOME COMMENTS ON HIRSCH'S VIEWS

I AM pleased to have further attention given to the subject of crop yield index numbers in this journal, since my article in the November 1940 issue professed to be only a preliminary and incomplete treatment of the subject. But in the case of Hirsch's article in the August issue of this year, the enthusiasm with which I greet

a revival of the discussion is considerably dampened by disappointment with what he writes. Hirsch's article contains some serious errors which ought not to be left uncorrected.

My principal criticism concerns the section entitled, "Base Reversal Test and 'Upward Bias'." Hirsch seems to have failed completely to grasp the essential idea of the base reversal test and to have become confused by the concept of a crop-yield index number as a ratio of acreage aggregates.

The term, "base reversal test," was first used, I believe, by W. M. Persons, and by it he means the same thing as Fisher and most other writers do by "time reversal test." Fisher clearly recognized that the test was equally applicable to index numbers which did not constitute a time series; but, nevertheless, "time reversal test" never seemed quite an appropriate term in the case of crop-yield or other indexes which commonly deal with differences between farms or other spatial differences, rather than differences between points of time. Consequently, Persons' terminology is probably the better one to use. Nevertheless, it has the disadvantage that in the case of weighted indexes the term, "base reversal," does not apply with equal aptness to the two phases of the test. These are, first, the reversal of the relatives, and second, the interchanging of weights. The first reverses the base of the index in the sense that a different set of yields, or of prices, in case of a price index, is assigned the value of 100 by the index. The interchanging of weights, on the other hand, has no effect upon which set of yields the index gives the base value of 100. It would have been better, I think, to have limited the term, "base reversal test," to the interchanging of the relatives (yield, price, or quantities relatives as the case may be) and to have used the term "weight reversal test" to cover the interchanging of base and given weights.

Hirsch presents (p. 587) as the result of "A third method to reverse the original formula," an index which he designates as (1c). In what follows, I shall use the same system of formula identification as that used by Hirsch except that I shall indicate the expanded form sometimes used by Hirsch by the letter, E.

The original index was:

$$\frac{\sum\left(\frac{y_1}{y_0}\cdot a_1\right)}{\sum a_1}. \qquad \text{(Formula 1)}$$

Or, to use the expanded form shown by Hirsch on page 586:

$$\frac{\Sigma\left(\frac{y_1 a_1}{y_0}\right)}{\Sigma\left(\frac{y_1 a_1}{y_1}\right)}. \qquad \text{(Formula 1-E)}$$

The correct complete reversal of both yields and weights involves changing all the subscripts, and is:

$$\frac{\Sigma\left(\frac{y_0 a_0}{y_1}\right)}{\Sigma\left(\frac{y_0 a_0}{y_0}\right)} = \frac{\Sigma\left(\frac{y_0}{y_1} \cdot a_0\right)}{\Sigma a_0}. \qquad \text{(Formulae 1b-E and 1b)}$$

The correct yield reversal alone (if the $a_1$ weights are to be retained as constant) is:

$$\frac{\Sigma\left(\frac{y_0 a_1}{y_1}\right)}{\Sigma\left(\frac{y_0 a_1}{y_0}\right)} = \frac{\Sigma\left(\frac{y_0}{y_1} \cdot a_1\right)}{\Sigma a_1}. \qquad \text{(Formulae 1a-E and 1a)}$$

But Hirsch gives (p. 587) as the "third reversal" of Formula 1-E:

$$\frac{\Sigma\left(\frac{y_1 a_1}{y_1}\right)}{\Sigma\left(\frac{y_1 a_1}{y_0}\right)} \qquad \text{(Formula 1c-E)}$$

which reduces to:

$$\frac{\Sigma a_1}{\Sigma\left(\frac{y_1}{y_0} \cdot a_1\right)}. \qquad \text{(Formula 1c)}$$

Obviously Hirsch has interchanged the subscripts of only two of the four yields which appear in Formula 1-E, and the result is that Formula 1c, although it uses Farm 1 yields as a base, is *an entirely different type* of index number. It is a *harmonic* index of

yields on Farm 0 with yields on Farm 1 as the base and acreages of the base farm as weights.

This fact was pointed out in a letter which I wrote to the Editor regarding the manuscript as first submitted and which the Editor forwarded to Hirsch. Among other things, I stated in that letter:

"The amusing thing about all this is that Mr. Hirsch's 'third and only correct reversal of the original index' is, as a matter of fact, nothing more nor less than a weighted harmonic mean of yield relatives. Yet on page 8, he says, 'Therefore, a harmonic formula is out of place where crop-yield index numbers are to be constructed for one of their common purposes'."

Judging from the changes which he made in his manuscript, Hirsch was able to see that his Formula 1c constituted a harmonic index. Indeed, he has stated (p. 584) that Formula 1a, "is the reciprocal of a harmonic mean of yield relatives weighted by given acreage." One cannot help but wonder why he has been unable to comprehend that Formula 1c is not a base reversal of the same form of index number indicated by Formula 1.

Having in mind the usual definition and method of computing a crop-yield index, no farm management man in his right mind would have computed yields for Farm 0 relative to those on Farm 1 in the manner indicated by Hirsch's Formula 1c. Yet this computing of an index of yields on Farm 0, relative to those on Farm 1 in precisely the same manner as the index of yields on Farm 1 was computed relative to those of Farm 0, is the very essence of the time reversal, or base reversal test.

On the other hand, we might define another form of crop-yield index number as: The ratio of the aggregate acreage necessary to produce a fixed composite of crops at base yields to the aggregate acreage necessary to produce the same composite of crops at given yields. But this is a "backhanded" way of arriving at a yield index. It amounts to taking the reciprocal of a measure of a thing which varies reciprocally with yields. An appropriate designation of such an index by formula would be:

$$\frac{\Sigma\left(\frac{y_k a_k}{y_0}\right)}{\Sigma\left(\frac{y_k a_k}{y_1}\right)} \qquad \text{(Formula 5)}$$

where the subscript $k$ stands for constant values of the acreage and yield to which it is applied. The base reversal of this index would be:

$$\frac{\Sigma\left(\frac{y_k a_k}{y_1}\right)}{\Sigma\left(\frac{y_k a_k}{y_0}\right)}. \qquad \text{(Formula 5a)}$$

Throughout most of the article, Hirsch's reasoning seems to be dominated by the view that crop-yield indexes should be considered as ratios of acreage aggregates. This view is what leads him to consider Formula 1c a base reversal of Formula 1. It likewise leads him to discard the geometric mean as not expressing "the kind of comparison which is desired."

Each acreage aggregate is, of course, the number of acres required, at specified yields, to produce a given "production composite." In discussing this production composite, Hirsch says (p. 589):

"This production composite, i.e., the object of the comparison between given and base yields, should be held constant for the binary comparison between given farm and base and also for the application of the base reversal test.—The assumption of a constant production composite for all farms in a series is in conflict with the concept of varying yields, the measurement of which is the very purpose of a crop-yield index."

I do not agree with the view that crop-yield indexes should be considered as acreage aggregates. The more direct and less confusing way is to treat them as averages of price relatives. However, for the benefit of anyone who does wish to view them as acreage aggregates, I wish to point out the error of the last statement quoted above.

It is perfectly possible to have a crop-yield index which measures varying yields between several farms and yet uses a constant production composite in computing the index for each farm. As a matter of fact, this very thing is done by the form of index which Hirsch designates as Formula 1c. Since this is a reversed formula, however, the fact tends to be obscured. The unreversed formula, in terms of the usual notation, is:

$$\frac{\sum a_0}{\sum\left(\frac{y_0}{y_1}\cdot a_0\right)}. \qquad \text{(Formula 6)}$$

Or, to put it in the expanded form:

$$\frac{\sum\left(\frac{y_0a_0}{y_0}\right)}{\sum\left(\frac{y_0a_0}{y_1}\right)}. \qquad \text{(Formula 6-E)}$$

Is not either Formula 5 or this base acreage weighted harmonic mean of yield relatives the index Hirsch is bound to favor among all other acreage-weighted indexes if he is consistent in his views?

Again, if a "constant production composite" is the outstanding criterion for an acreage-weighted crop-yield index, why not extend the idea and propose a "constant value composite" which is to be divided by the base and given yields respectively in the numerator and denominator? This would result in:

$$\frac{\sum\left(\frac{y_0a_0p_0}{y_0}\right)}{\sum\left(\frac{y_0a_0p_0}{y_1}\right)} = \frac{\sum(a_0p_0)}{\sum\left(\frac{y_0}{y_1}\cdot a_0p_0\right)}. \qquad \text{(Formula 7-E and Formula 7)}$$

Another possibility is:

$$\frac{\sum\left(\frac{y_0y_0a_0p_0}{y_0}\right)}{\sum\left(\frac{y_0y_0a_0p_0}{y_1}\right)} = \frac{\sum(y_0a_0p_0)}{\sum\left(\frac{y_0}{y_1}\cdot y_0a_0p_0\right)}. \qquad \text{(Formula 8-E and Formula 8)}$$

In this last formula, the value of the crops produced with base yields on base acreages and at base prices could be indicated by the symbol $v_0$, and the simplified formula would then become:

$$\frac{\sum v_0}{\sum\left(\frac{y_0}{y_1}\cdot v_0\right)}. \qquad \text{(Formula 8-S)}$$

Space is not available for me to go into a detailed criticism of all these weighted harmonic indexes with base weightings (Formulae 6, 7, and 8). All of them, however, must be considered to have a downward bias unless it can be shown that their downward type bias is counteracted by an upward weight bias. I have not made any careful empirical analysis of weight bias in crop-yield index numbers, but it is my opinion that none of these weightings except that of Formula 8 will show any important weight bias. Formula 8 would have a marked upward weight bias.

On page 588, Hirsch states, "The alleged 'type' bias of the arithmetic mean may be explained as the legitimate result of different comparisons expressed by the original index and its usual reversal." Now, the arithmetic mean, as such, has no type bias. I assume, consequently, that Hirsch is referring to the type bias of that form of index which is an arithmetic mean *of relatives*.

Can it be that Hirsch has never heard of the distinction between *type bias* and *weight bias* in index numbers? Much has been written by various authors to demonstrate type bias in the simple arithmetic and harmonic indexes. These authors have also shown the effects of weight bias, and of type and weight bias combined in weighted indexes of prices and quantities. While the conclusions as to weight bias in value-weighted, price indexes cannot be applied directly to acreage-weighted crop-yield indexes, the conclusions as to type bias apply to every arithmetic and harmonic index which is an average of relatives. If one is to test for type bias in a weighted index of yields, it should be done by reversing the yields only—that is, Formula 1 should be tested by the transformation shown by Formula 1a.

All arithmetic indexes have an upward type bias and all harmonic indexes a downward type bias. In case of weighted indexes, this type bias may be counteracted by an opposite weight bias.

What has been called weight bias in price indexes is due to the existence of correlation between the price relatives and their weights. There is likely to be such correlation between either given-year or base-year value weights and the price relatives because either the numerator or the denominator price is one element in the value weight. It does not seem likely that a similarly important correlation will often be found between yield relatives and acreage weights of crop-yield indexes. Hence, acreage-weighted crop-yield indexes are not likely to show a weight *bias*, although such weighting may make them *erratic*.

Hirsch points out (p. 589) that in case of his Formula 2, " . . . a given zero yield would render the value of the denominator of the index infinite." This is true of all harmonic indexes which do not have the given yields as one element of the weights. But is is likewise true that a base yield of zero will make infinite the numerator of all arithmetic indexes except those which have the base yields as one element of their weights.

I think that Hirsch's use of the terms "single weighted" and "double weighted" is unfortunate. It may mislead some into thinking that there is a difference between the two in the process of weighting rather than merely in the weights chosen for use. The value of a crop is a single figure just as much as the acreage of that crop. The principal reason for writing "$y_0a_0p_0$" as a weight in an index number formula in place of merely $v_0$ is so that it may be evident that the magnitude of the weight is related in a specific way to the magnitude of the yield relative which it weights.

One final point—Hirsch says, "A base acreage weighted yield index may be regarded as a pure measure of yield." It would have been better to have said that, "A constant weight yield index may be regarded as a pure measure of yield." Whether the weights are acreage weights or not has nothing to do with the question. Furthermore, this may be said of any fixed weight index, regardless of whether the fixity of the weights is due to their being base weights or not.

ELMER J. WORKING

*University of Illinois*

## GRAPHIC METHODS OF PRESENTING MULTIPLE CORRELATION ANALYSIS

SPIRITED discussion of the comparative merits of graphic and mathematical methods of multiple correlation has been almost continuous since the graphic method was introduced by Louis H. Bean in 1929.[1] Attention has been focused, however, on the techniques of arriving at correct conclusions from analysis rather than on their presentation. Few suggestions have been made as to the most appropriate methods of publishing the results of either type of correlation.

[1] L. H. Bean, Applications of a Simplified Method of Graphic Curvilinear Correlation (mimeo. report), B.A.E., U. S. Dept. Agr., April, 1929.

Among the articles that have contributed to the discussion are: Warren C. Waite, Some Characteristics of the Graphic Method of Correlation, *Jour. Am. Stat.*

In discussing "Graphic Methods Used in Presenting Agricultural Economics to the Public," R. G. Hainsworth deals more with methods of analysis than with presentation, in the section headed "Graphic Correlation Charts." The section was omitted entirely when his paper was summarized in the JOURNAL OF FARM ECONOMICS.[2] F. L. Thomsen, in his book on "Agricultural Prices,"[3] devotes a couple of pages to presentation and describes two methods, only one of which he actually uses in the book, and outlines an additional chart which may elaborate upon the usual scatter diagrams. In concluding a short statement on "Application and Uses," H. R. Wellman says, "Two other aspects should be mentioned: one relates to the presentation of a multiple correlation in graphic form even when derived mathematically; the other to the use of the graphic method in teaching. I do not want to take time to discuss these now. I merely call them to your attention. A graphic representation . . . not only facilitates understanding by the reader but also provides the investigator himself with a clearer picture of the results actually obtained."[4] He does not offer suggestions as to how the graphic representation should be made.

Perhaps the reason graphic presentation has been given so little emphasis is that it has not been used extensively in published reports of research. Mr. Wellman concludes, as a result of his survey, that published illustrations "constitute only a small portion of the total number of analyses which have been made." If graphic representation is as important as he suggests, it deserves careful consideration. A few suggestions on the subject, therefore, may be in order.

The results of multiple correlation usually are presented graphically by a series of regression lines which show the net relationship between the dependent variable and each of the independent vari-

---

*Assn.*, Vol. 27, March, 1932, p. 68; Mordecai Ezekiel, Further Remarks on the Graphic Method of Correlation, *Jour. Am. Stat. Ass'n.*, June, 1932, p. 183; Wilfred Malenbaum and John D. Black, The Use of the Short-Cut Graphic Method of Multiple Correlation, *Quart. Jour. of Econ.*, Vol. 52, 1937, p. 66; Bean, Ezekiel, Black and Malenbaum, a series of comments on Short Graphic Methods of Multiple Correlation, *Quart. Jour. of Econ.*, Vol. 54, Feb., 1940, p. 318; H. R. Wellman, Application and Uses of the Graphic Method of Multiple Correlation, JOUR. FARM ECON., Vol. 23, Feb., 1941, p. 311; and Warren C. Waite, Place of, and Limitations to the Method, JOUR. FARM ECON., Vol. 23, Feb., 1941, p. 317.

[2] Address, Am. Farm Econ. Assn., Detroit, Mich., Dec. 29, 1938, mimeo. B.A.E., U. S. Dept. Agr., and JOUR. FARM ECON., Vol. 21, Feb., 1939, p. 346.

[3] F. L. Thomsen, Agricultural Prices, p. 233.

[4] H. R. Wellman, op. cit.

ables included in the analysis. Differences in methods of presentation arise from the arrangement of dots about the regression lines and from the scales used to represent the dependent variable. In general, three methods of graphic presentation are used although modifications and combinations of these are possible. Two of the methods are essentially different, while the third really is a combination of the other two.[5]

In the discussion which follows, the three methods will be illustrated by a study of factors influencing the price received for turkeys by producers in the United States. The results are shown in Figures 1 and 2. The dependent variable ($X$) is a weighted average price of turkeys during the months of October, November, December and January. The independent variables are an index of nonagricultural income per capita ($X_2$) and the pounds of live turkey produced per capita ($X_3$). The coefficient of multiple correlation is $R_{1.23}=.94$ and the estimating equation is $X_1=5.161=.284X_2 -5.714X_3$, both derived graphically.

*Method No. 1*

In presenting the graphic method of multiple correlation, Bean used charts similar to Sections A and B of Figure 1 and a final chart not illustrated here. In the first graph the dependent variable ($X_1$) is plotted on the vertical scale against one of the independent variables ($X_2$) on the horizontal scale. The independent variable most closely correlated with $X_1$ usually is selected as $X_2$. The dots are numbered to maintain their identity with original data. Across the graph a solid line is drawn to represent the net regression of $X_1$ on $X_2$ when the influence of $X_3$ (and that of any additional variables considered) has been allowed for. The line may be straight or curved.

In Figure 1, Section A, prices of turkeys are plotted against nonagricultural income per capita which was selected as an index of demand. The diagonal line shows the net regression of price on income.

---

[5] An excellent illustration of Method 1 may be found in, Factors Affecting Apple Prices, The Fruit Situation, U. S. Dept. Agr., mimeo., Aug. 22, 1939. Method 2 is used in Factors Affecting the Average Price Received by Farmers for Turkeys in the United States, The Poultry and Egg Situation, U. S. Dept. Agr., mimeo., Oct., 1940. Method 3 is used by E. J. Working on pages 246 and 248 of the April, 1932 issue of the JOURNAL OF FARM ECONOMICS in Indications of Changes in Demand for Agricultural Products. Method 1 is used on page 250 of the same issue.

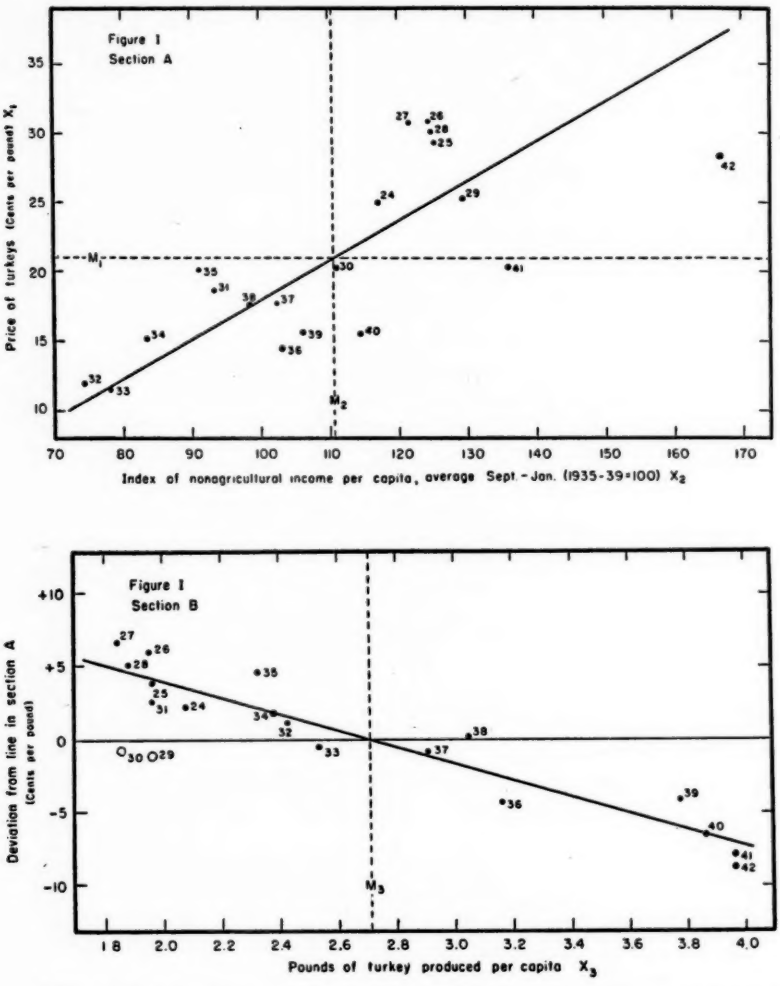
Figure 1
Section A
Price of turkeys (cents per pound) $X_1$
Index of nonagricultural income per capita, average Sept.-Jan. (1935-39=100) $X_2$
$M_1$
$M_2$
Figure 1
Section B
Deviation from line in section A (cents per pound)
Pounds of turkey produced per capita $X_3$
$M_3$

FIG. 1. RELATION OF TURKEY PRICES TO INCOME AND PRODUCTION OF TURKEY PER CAPITA.

Prices increased, on the average, nearly 3 cents with each 10-point rise in the index of nonagricultural income per capita and fell about $5\frac{3}{4}$ cents with each increase of one pound of turkey per capita.

In the second graph, deviations from the net regression line in Section A are plotted above and below a zero point on the vertical scale and against the next independent variable ($X_3$) on the hori-

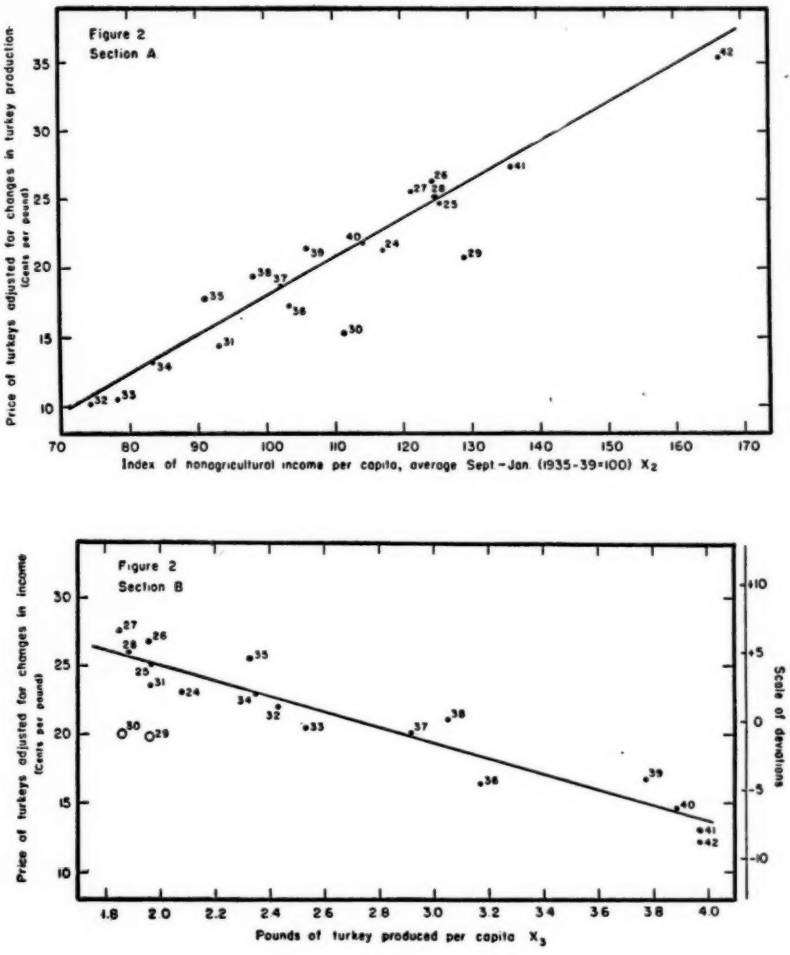
Figure 2
Section A
Price of turkeys adjusted for changes in turkey production (Cents per pound)
Index of nonagricultural income per capita, average Sept.-Jan. (1935-39=100) $X_2$
Figure 2
Section B
Price of turkeys adjusted for changes in income (Cents per pound)
Scale of deviations
Pounds of turkey produced per capita $X_3$

FIGURE 2. RELATION OF TURKEY PRICES TO INCOME AND PRODUCTION OF TURKEY PER CAPITA.

zontal scale. Identification numbers for the dots are carried forward. A solid line is then drawn to show the average net relationship between the deviations and $X_3$.

In Figure 2, Section B, deviations of turkey prices from their net regression on income are plotted against the pounds of turkey produced per capita, reflecting supplies available. The diagonal

line shows the net regression of these deviations on production.[6]

Bean's final graph compared the original values of $X_1$ with those estimated by use of the net regression lines in sections 1 and 2. For this problem it would be a line chart with original and estimated turkey prices shown by separate lines as time series.

*Method No. 2*

The second method is illustrated by Figure 2, Sections A and B, in which the original values of $X_1$ are adjusted for the effect of all independent factors included in the study except one. The adjusted values, measured by the vertical scale, then are plotted against the omitted independent variable. A graph is used for each independent variable.

In Section A, turkey prices have been adjusted for changes in turkey production and plotted against the index of income per capita. The diagonal line across the chart shows the average net relationship between prices and income. Original prices are not shown but the adjusted prices are expressed in cents per pound.

In Section B, prices adjusted for changes in income are plotted against turkey production per capita to show the net relationship between prices and production. The dots are scattered about the net regression line in the same manner as in Section A but the adjusted prices are different.[7]

*Method No. 3*

In the third method, the first scatter diagram is like that of Section A in Figure 1. The original values of the dependent variable are plotted against one of the independent variables and a line representing their net relationship is drawn. Additional scatter diagrams are of the type used in Figure 2 except that the vertical

---

[6] In the last scatter diagram this is a gross relationship because no additional independent variables are considered.

In the turkey problem, deviations in 1929 and 1930 were so unusual that they were omitted in locating the line in Section B. It is about ½ cent higher than it would be if they were considered. The grouping and arrangement of dots suggests that demand for turkeys is less elastic than the diagnonal lines would indicate, and that demand has increased with an irregular growth in the turkey industry.

[7] The dots in Figure 2, Section A, may be located in either of two ways. (1) Prices may be adjusted for the influence of turkey production and then plotted; or (2) the net regression line may be drawn first and the final residuals plotted against this line.

scales represent deviations rather than original values of $X_1$. The scale at the extreme right of Section B, Figure 2, is an illustration.

For correlation analyses with only two independent variables, Methods 1 and 3 are identical.[8] When more than two independent variables are used, only the final deviations are shown about each net regression line in all diagrams after the first.

### *Comparison of Methods*

An examination of Figures 1 and 2 will indicate that the net regression lines are alike. It is in the vertical scales used and in the arrangement of dots that the two figures differ. A choice between them, therefore, may lie in their preparation or interpretation.

Diagrams for Methods 2 and 3 may be prepared somewhat more easily than for Method 1, when correlations are computed mathematically. On the other hand, Methods 1 and 3 result directly from short-cut graphic methods of correlation. The usual process of arriving at second and third approximation curves results in charts of the type used in Method 3.

For interpretation by the reader, Method 1 shows the basic step-by-step process of computing correlations by the short-cut graphic method. For this reason it frequently is used in teaching and in text books. It affords opportunity for the reader to check the work of the author and to insert additional data as they become available. The accuracy with which final net regression lines are drawn, however, may be judged more easily from Method 3. Estimates of the dependent variable from new combinations of the independent ones can be made from the diagrams used in either method.

Method 2 places special emphasis on the shape and location of net regression lines. The graphs cannot be used in estimating values of the dependent variable from various combinations of the independent ones unless supplemented by more information than frequently is given. The original values of $X_1$ which are shown in the first charts of Methods 1 and 3, are not available to the reader of Method 2, thus it is hard for him to visualize the amount of original variation which is accounted for by the analysis. On the whole, Method 2 seems the least useful of the three.

---

[8] If the scale at the right of Section B, Figure 2, is substituted for the scale of prices at the left, the chart becomes identical to that of Section B, Figure 1.

*Additional Methods*

One of the objections to Method 2 is that original values of the dependent variable (price of turkeys) are not shown. An attempt to overcome this objection sometimes is made by adding them to Figure 2. One way is to show the original prices by crosses and the adjusted prices by dots. When this is done the two are connected by broken lines.[9] While this has some merit it has the disadvantage of showing two points for each observation. Connecting lines, too, become confusing if the value of any dependent factor is repeated. Another way is to show original prices by very light dots and not connect them to the dots representing adjusted prices.[10] This permits original prices to stay in the background and avoids confusion caused by the connecting lines. In some instances, however, it may not be possible for the reader to pair off original and adjusted prices.

When the chief purpose of presenting the results of a correlation analysis is to show the influence of independent variables upon the dependent variable, a table may be used.[11] Average values of the dependent variable which are found to be associated with selected values of the independents are recorded in tabular form. It is the most simple form of presenting results of multiple correlation in other than very general terms. It shows the combined as well as the separate effects of independent variables, and if the relationships are linear, values of the dependent variable may be estimated for different combinations of the independent variables. The method is not satisfactory when relationships are markedly curvilinear and its effectiveness is limited to problems with two or not more than three independent variables.

*Concluding Suggestions*

The use of any one of the methods presented here need not preclude all of the advantages of other methods. Method 2 used in conjunction with a table, for example, would retain the advantages of both and eliminate some of the disadvantages.

---

[9] H. B. Boyd Factors Affecting the Prices and Acreages of Cigar Tobacco in the United States, Storrs, Conn., Agr. Exp. Sta. Bul. 180, June, 1932.

[10] E. J. Working, Production and Demand, Contrasts Between Agriculture and Other Industries, Chap. 11 in Stabilization of Employment, edited by C. F. Roos, page 176.

[11] F. A. Pearson and K. R. Bennett, Statistical Methods, p. 184.

In Figure 1 the mean of each variable is indicated by a broken line and the point of averages by the crossing of these lines. This is not the usual practice but one which may be recommended for all graphic methods. If lines showing the averages are added to the charts in Method 2, estimates of the dependent variable may be made from any combination of values of the independent ones, thus overcoming one of the objections to that method. Estimates are not made as conveniently as in Methods 1 or 3, however.

Finally, if the results of correlation analysis are to have general use, the variable used should be in readily available form, insofar as is practicable. The turkey illustration is not satisfactory in this respect because the index of income per capita was calculated from other data and is not readily available in the form in which it is used. Probably some currently published index of income would be nearly as satisfactory but turkeys are marketed chiefly in a period of a few weeks so a combination of monthly indexes is preferred to an annual one. Without access to the work sheets anyone will have difficulty in applying this analysis to situations which arise in the future.

The presentation of results of correlation analysis in the manner most useful to readers is a worthy objective of those who use the method in their research.

DANA G. CARD

*University of Kentucky*

## PUBLICATIONS RECEIVED

Black, John D., Food Enough, Lancaster, Pa., Jaques Cattell, 1943. $2.50.

Brown, Ralph H., Mirror for Americans, New York, American Geographical Society, 1943. 312 pp. $4.00.

Nicholls, W. H. and Vieg, John, Wartime Government in Operation, Philadelphia, Pa., The Blakiston Co., 1943. $1.50.

Wickizer, V. D., The World Coffee Economy with Special Reference to Control Schemes, Stanford, California, Stanford Univ., 1943. 258 pp. $3.00.

Wilcox, Walter W., et al, Farm Management Research, 1940–1941, A Report by the Sub-Committee on Farm Management. (Bulletin 52) New York, Social Science Research Council, 1943. 60 pp.

# REVIEWS

*World Trade in Agricultural Products*, Henry C. Taylor and Anne Dewees Taylor. New York: the Macmillan Company, 1943. Pp. 286. $3.50.

As Dr. Taylor indicates in his preface, he conceived the idea of preparing a general review of agriculture's part in world trade while he represented the United States at the International Institute of Agriculture. Out of this came the volume *World Trade in Agricultural Products*, prepared under Dr. Taylor's direction by L. B. Bacon and F. C. Schloemer. That book was printed in Rome in 1940 but because of war interferences, the number of copies reaching the United States has been so limited that few persons have had access to it. The book under review is a summary of the earlier volume. While it is much more condensed than the original report (286 pages compared with 1102) and includes less statistical detail, it has the compensating advantage of being more readable than the other. For the general reader it is the more valuable of the two.

This book is what its title implies, namely, a review of world trade in agricultural products. The commodity approach is employed, thirteen of the sixteen chapters dealing with specific commodities or groups of commodities. These are factual presentations of the volume of trade, the countries involved and conditions affecting trade in the various countries, rather than discussions of questions of policy. In consequence, students seeking information on the trade picture for a specific commodity may go directly to the appropriate chapter. This makes it a highly useful reference book.

Chapter XV discusses governmental policies bearing on trade, but in keeping with the rest of the volume emphasis is placed on presenting facts regarding such policies rather than a critical analysis of them. Readers will find this brief review of trade programs of various countries helpful. The final chapter presents some of the authors' own evaluation and conclusions. Included is a brief discussion of "the world social structure." The observation is made that "The commerce of the world can best serve all the people of the world only when the world social structure has been developed to the point where the actions of any one nation do not run counter to the best interests of the world as a whole" (p. 266). It is suggested that while such a situation may be remote, it is a goal to

work for in the development of trade and of peace. The authors conclude with the observation that "The aim should be to put trade in agricultural products on a basis that will make its materials, its forms and its practices contribute the maximum to the social and economic well-being of all people" (p. 277).

The statistical data relating to world trade are necessarily of pre-war vintage which makes them somewhat outdated. This is unavoidable because the data are not available and normal currents of trade are disrupted so it is something beyond the control of the authors. The war may lead to decided changes in trade relationships which will modify the trade picture presented in this book. However, it still will be very useful as a source book for anyone interested in international trade in agricultural products. It is a valuable addition to the literature in the fields of agricultural economics and foreign trade.

O. B. JESNESS

*University of Minnesota*

*Postwar Economic Problems*, Harris, Seymour E., New York, McGraw-Hill, 1943. $3.50. 412 pp.

This is a symposium consisting of 23 essays divided by subject into eight parts touching upon the overlapping problems of business fluctuations, government control of enterprise, statistical information, fiscal policy, labor, agriculture, international relations, and price controls as it is foreseen by a remarkably qualified set of contributors that these matters will have to be dealt with after the war.

The essays treat their problems variously. Some deal with the special aspects of their problems which the authors think likely to be most urgent as a direct result of the war. Others discuss principles that would apply in either a pre- or a post-war period. Most of the essays are excellent, and the book should be useful for the social scientist interested in a pointed review of the subjects dealt with. Particularly stimulating to your reviewer were an essay on the general economy by Alvin A. Hansen, one on capitalism by Joseph A. Schumpeter, and one on agriculture by John D. Black.

Practically all of the contributors say in one way or another that there can be no entirely satisfactory solution of their various problems without the maintenance of a high level of employment and income. Hansen, in the opening essay, sounds a hopeful keynote on

this point. He believes that economic fluctuations can be controlled. He looks for bold planning, on a democratic basis, with the objective of full employment under private capitalism. This would call for relatively high consumption levels and a relatively low rate of profit although probably high total profits. He discusses the problem of bringing all this about, and he outlines in some detail a program for government to follow to that end.

Against this theme, portions of which are elaborated in a number of the other essays, Henry C. Simons presents the view that a return to nineteenth-century liberalism is called for. Schumpeter says that a return "to the capitalist alternative" is not likely, although it would, he thinks, reduce economic frictions and inefficiencies and increase economic "motive power." Presumably he also thinks that it would, as he says that it did the first time, produce "an attitude of the public mind, and an orientation of the political sector that are at variance with its (capitalism's) own law of life"; so that, even if it could be accomplished, it should on his reasoning lead to a repetition of the chaos of the past thirty years.

On postwar agriculture, in addition to the article by Black, the symposium includes essays by M. L. Wilson and Joseph S. Davis. All of these look toward better feeding of the world's populations, or at least of the United States population, as the basic means of solving the problem of farm surpluses after the war. Wilson reviews the progress of nutritional science and points out that each nation in the postwar world will calculate its minimum food requirements on the basis of recent (as well as even greater future) discoveries in this relatively new field. Black discusses the practical problems government will face, under a number of assumptions, in adjusting consumption and agricultural production to one another. Davis is concerned that any postwar international commodity agreements be so drawn and so administered as not to militate against a high standard of consumption.

The international relations portion of the symposium, containing four essays, is somewhat inconclusive, as may perhaps be the easiest course in a field where the nature of the problems to be met depends so largely upon future political arrangements. It is of interest, however, that at least three of the four essays hope for a liberal policy which will give government action a relatively small place in international trade and capital movements. They agree that the one essential requirement for this liberalization is the maintenance

domestically, presumably by at least as much government action as Hansen advocates, of a high level of employment and income. They apparently have not considered the possibility that such government action may of itself militate toward extensive government interference in international economic relations.

ROBERT B. SCHWENGER

*Office of Foreign Agricultural Relations*

*The Farm Bloc*, Wesley McCune, Garden City, N. Y., Doubleday, Doran and Co., Inc., 1943. 278 pp., $2.

In Mr. McCune's political philosophy the right of individuals and groups to organize and promote particular programs is a fundamental principle of democracy. A corollary of this principle, to him, is the necessity for such organization and promotion to be carried on in full view of the general public which it affects. Thus in The Farm Bloc he has sought to contribute to this end by providing a general outline of the objectives and methods of one of the most powerful interest groups in the country through a discussion of primary agricultural issues, farm protagonists in Congress, the major farm organizations and their leaders, and the Department of Agriculture. The author was for a year an economist of the Surplus Marketing Administration and for the past two and a half years has covered the Washington agricultural scene for Newsweek.

The Farm Bloc is not a definitive statement of the historical development of the great heterogeneous group of individuals and organizations with a special interest in the national agricultural economy, but it is a readable and informative, if generalized, presentation of the subject in the contemporary scene. Mr. McCune has not hesitated to open the most controversial of agricultural issues; the volume is wide in scope and is current, ending with the reign of Chester Davis as War Food Administrator. The size, strength, and complexity of the farm bloc are surprising in total, even to those accustomed to dealing with its segments, and its power is revealed by its legislative success. Particularly interesting are sketches of farm Congressional and organization leaders which are often supplemented by incisive quotations, although in some instances too much irrelevant data dulls these bright spots. To be noted especially are the accounts of the relationship of some farm organizations to business counterparts and the statement of the

labor policy of four of the larger farm organizations. Perhaps the most absorbing writing in the book is a vivid recital of the Congressional inflation control battle in the fall of 1942.

To one at all familiar with the agricultural scene there are a number of points in the volume at which it could be strengthened. The statement of farm issues could well have been expanded and clarified, particularly the exposition of the parity concept. While a large proportion of the book is given to the development of the major farm organizations the respective chapters lack historical perspective and fade into discussions of personalities without having achieved a clear outline of constituency, policy, and organization. The sixteen pages devoted to the Department of Agriculture might well have emphasized the present organization and function of the agency with attention to the development and policies of the War Food Administration.

The principal contribution of Mr. McCune lies in the fact that here progress has been made in exploring a most controversial field which has been the recipient of little organized research. It is to be hoped that the author, having made an initial exploration, will continue his investigation in a second volume. Certainly his objective is one with which few will disagree.

O. B. CONAWAY, JR.

*Bureau of Agricultural Economics*

Western Prices Before 1861 (A Study of the Cincinnati Market), Thomas Senior Berry, Harvard University Press, Cambridge, Massachusetts, 1943. 645 pp., $5.00.

Economists and historians may well be grateful to Dr. Berry for his scholarly book. He has made a lasting contribution to the study of wholesale prices and related data prior to the Civil War, chiefly in the Cincinnati, Ohio, market. In preliminary reports the author used the term Ohio Valley prices or Ohio River Valley prices. It is regrettable that one of these area terms was not retained in preference to the less appropriate and somewhat confusing title of "Western Prices."

Historical studies of wholesale prices in other cities in the United States have been confined largely to seacoast cities, namely, Boston, New York, Philadelphia, Charleston, and New Orleans. Consequently, this price study for the inland city of Cincinnati is es-

pecially welcome although some of the same ground was covered by Dr. Henry Ellis White.[1]

The rapid development of Cincinnati to a position of leadership among hinterland markets in the early nineteenth century, as related by the author, is an interesting and vivid story. Cincinnati was truly a queen among "Western" cities when the Ohio River was the one great highway of commerce in the Ohio Valley. With the development of this region, and the technological advancement in transportation, agriculture, and manufacturing, Cincinnati served as a laboratory for illustrating and testing some of the prevailing economic theories. Incidentally, the housing shortages and growing-pains of Cincinnati in the early days is reminiscent of Washington, D. C., and other centers of war activity today.

For the most part, the author has made a thorough analysis of the available data. However, in some cases, as in charting the trends in freight rates, it would have been helpful if he had made comparisons in terms of a constant price level. Some of the periodic index numbers of seasonal variations in prices (pp. 133, 566–7) are difficult to rationalize. Possibly these indexes reflect some other trends as well as seasonal variations. In a study of prices of farm products in Virginia, the reviewer found that newspaper publishers in the early nineteenth century had a tendency to forget to change, or to drop, the price quotations during considerable periods when there was a lack of activity in the local market. Perhaps a similar situation may account in part at least for the lack of variations in the seasonal indexes of prices for some agricultural products in the Cincinnati market from 1824 to 1848.

The importance of salt in the development of the "West" is strikingly brought out by the author. Before the days of the refrigerator car and refrigeration plant, commercial livestock slaughtering was chiefly a winter-season business and the preservation of meat was largely dependent on an ample supply of salt.

A century or more ago flour and whiskey were classed among the leading agricultural products. The author also classifies manufactured tobacco as an agricultural product. Farmers found it profitable to market their corn in the form of whiskey which was abundant and cheap a century ago. With the development of railway

[1] An Economic Study of Wholesale Prices at Cincinnati, 1844–1914 (1935) and a summary thereof: Wholesale Prices at Cincinnati and New York (Cornell Agr. Expt. Sta. Mem. 182, 42 pp., Ithaca, 1935).

transportation and a relative rise in the demand for hog products, farmers began to market their corn through livestock rather than through the local distillery.

There are several other contributions that might be cited, but suffice it to say, that Dr. Berry's book is well worth reading by any one interested in the history of prices in the United States.

ARTHUR G. PETERSON

*Bureau of Agricultural Economics*

*Maquinara Agrícola* (*Agricultural Machinery*), Gleason, Miguel Alvarez, Monografias Industriales del Banco de México. México, 1943. pp. 277+18 folded tables.

*A Technica de Beneficiamento do Algodão* (*The Technique of Processing Cotton*), Tosello, A. Bolsa de Mercaderias de Sao Paulo. Est. Graf. Cruzeiro do Sul. Sao Paulo, 1943. 330 pages, 15 plates.

*Cosecha Mecánica del Algodon* (*Mechanical Harvesting of Cotton*), Garcia Mata, Rafael, and Rómulo A. Franchelli. Ministerio de Agricultura, Junta Nacional del Algodón. Bul. No. 62. Buenos Aires, 1942. 126 pages.

In this era of continuous improvement of methods in agriculture, machinery is a matter of deep interest in Latin America as well as in the United States. Consequently, it may interest readers in this country to learn of three recent publications related to farm mechanization. The first one mentioned is from Mexico, the second from Brazil and the third from Argentina.

The book by Gleazon analyzes the economic possibilities of establishing a factory of agricultural machinery in Mexico. After putting briefly in evidence some historical facts about the evolution of machinery in the world and the industrial possibilities of the country, not only in respect to the raw material supply but also to the skill of native workers, the author analyzes many of the details of the manufacture, type and amount of labour required, the needed machinery and capital demanded, and estimates of what it would cost per unit to produce certain agricultural machines.

In an appendix, the writer gives us some statistical information about the farm machinery existing in the country in 1930, compared with 1935 and about importation from 1930 to 1941. Finally he proposes establishment of a model industrial plant, listing the machines which it would be possible to make, and

adds an estimation of the budget to operate the plant. In a few words, the book contains some valuable and interesting data, stated in a very detailed way. It must be remarked in this case, however, that the discussion might have been arranged in a more systematic and logical manner.

The book by Tosello is from Brazil. It is a thorough study of the treatment of cotton after its harvest, including the description, part by part, of all the machinery used in cleaning, ginning and pressing and its construction and care. Also considered is the influence of some operations on the quality of the product, the more common defects of the several processes and the means of correcting them.

The author finishes his outstanding work with an analysis of the cost of the operations treated and presents specifications for ginning equipment with capacity of 3,000 bales of cotton per year. The reader will probably notice only two omissions from this work: an index and a bibliography.

The third mentioned publication comes from Argentina, and is a study of cotton picking machines. It is divided into three parts. In the first, the authors treat of some general topics, of a social character, regarding the conditions under which manual pickers work in Argentina. In brief but conclusive sentences they show the similarity with similar pickers in the United States.

A comparison is made of the efficiency of mechanical with hand picking. Attention is directed to the indifference with which the cotton planters have always received cotton machinery. This fact is explained through slavery in early years in the United States, and later through the difficulty of mechanizing cotton farms of small acreage. In Argentina the writers say that there is no reason to reject picking machinery, since mechanization of the entire cotton raising process has now been technically solved.

The second part of this book describes some experiences in determining the efficiency of the cotton picking machines in Argentina, always in comparison with the results obtained in the United States.

Finally, in the third part, the authors state some conclusions and establish the cost of mechanical harvesting. A concise but descriptive summary ends this interesting study.

LUIS A. FOULON

*Iowa State College*

*Redirecting Farm Policy*, Theodore W. Schultz, New York, The Macmillan Co., 1943. Pp. VII, 75. $1.00.

*Wartime Farm and Food Policy*, Ames, Iowa, The Iowa State College Press, 1943, 30 cents. No. 8 and No. 9 of the series of pamphlets dealing with wartime agricultural policy. Pamphlet No. 8, Food Management and Inflation, Mary Jean Bowman and Albert Gailord Hart; No. 9, Land Boom Controls, William G. Murray.

These three publications by members of the Iowa State College staff have certain elements in common. All three are concerned with financial aspects of national economic policy as they relate to agriculture—agricultural price and income policy, general inflation control, and land market control. Professor Schultz brings to bear on agricultural policy a generalized body of economic thought on the directive functions of prices that is widely accepted in the fields of production, value, and distribution theory. Miss Bowman and Professor Hart focus another rather general body of economic thought with regard to wartime fiscal policy on the problems of wartime food management. Professor Murray adopts a somewhat different approach. He deals mainly with specific measures to cope with specific situations—specialized land market controls to cope with rising land values and attendant farm debt and tenure problems.

With different approaches to the interrelated problems discussed in these three publications, varying degrees of emphasis on interrelationships are likely to occur.

Professor Schultz is concerned mainly with the agricultural price policies needed to bring about more efficient use of agricultural resources. Other governmental measures to bring about a more desirable agricultural income pattern receive attention, but mainly to emphasize the need to confine price policy to production problems. He favors "forward" prices as the principal device for the redirection of agricultural production, and criticizes parity prices and parity income achieved through price policy as basic guides and goals for agricultural policy as a whole. He has less confidence, however, in our ability to devise special policies to achieve a more desirable rural income pattern than in our ability to devise a price policy to achieve maximum production.

There may be differences of opinion with regard to the extent

to which problems of efficient utilization of agricultural resources and those relating to a more equitable and otherwise more satisfactory rural income pattern can be dealt with separately. Price policies to promote efficiency of production also help to determine the rural income pattern. And certain policies with regard to the rural income pattern have repercussions in turn on the volume and direction of production. Professor Schultz recognizes that "once the flow of income to families starts dropping and prices generally start falling rapidly, the price mechanism loses much of its ability to coordinate economic processes" (p. 10). It seems fair to inquire, therefore, regarding the principles that would be followed in setting "forward" prices under these conditions. Presumably prices would be set which would call forth just the desired volume of each kind of production. If these prices yielded farm income so low that farmers generally were in danger of being bankrupted, then special income adjustment policies would be needed. Whether such an approach would be politically feasible during a major depression might be the deciding factor.

If managing resources and managing incomes are to be treated separately, it may be well to keep in mind that both are parts of a still larger problem—getting maximum human welfare out of available resources. Human welfare can be increased both by increasing productive efficiency and by distributing and utilizing any given amount of production in such a way as to maximize the utilities derived therefrom. We shall need to continue to work on both aspects of this larger problem; and the emphasis on particular methods may need to shift with economic conditions.

The price policies recommended by Professor Schultz to redirect production under wartime conditions cannot be separated entirely from the level of money incomes, inflationary pressure, and the other wartime fiscal problems discussed by Miss Bowman and Professor Hart. The price policies used to redirect agricultural production will also influence to some extent the aggregate volume of money income. If the right price relationships for different kinds of agricultural products are brought about mainly by raising those prices that need to be relatively higher, then the price policy as a whole will contribute directly to increased incomes. In a war emergency we are likely to arrive at proper price relationships by raising certain prices rather than by lowering others, especially

when larger aggregate incomes for particular groups stimulate production and relax the restraining effects of existing money contracts.

Miss Bowman and Professor Hart make much of the point that excess income and inflationary pressure tend to misdirect agricultural production and consumption by causing consumers to adopt prosperity standards of consumption that we cannot afford in wartime. To evaluate the secondary effects of excess income on the production and consumption of agricultural products without going back to the origin of the excess income, and to the primary redirection of production in the economy as a whole achieved in the process of generating the excess income, seems to be a somewhat incomplete analysis. When we use the monetary prosperity incentive as one method to redirect production, we find that people as consumers attempt to use their monetary prosperity in undesirable ways. Is not the problem of general inflation control concerned also with retaining as much as possible of the initial redirection of production throughout the economy that is achieved in part by inflationary price and income policies? Is this not in part what we mean when we recognize that a too stringent taxation program may retard speedy redirection of production?

Professor Murray deals with land market control almost entirely as a separate problem. He recommends credit controls, special capital gains and transfer taxes, and a form of land rationing as the principal control devices. The announced objectives of the recommended controls are to hold down land values and farm debts and to prevent undesirable changes in the farm ownership pattern. Land market control is not discussed in relation to the broader problems of wartime agricultural production considered in the other two publications. One is led to inquire whether the price of land is expected to perform any useful function in the agricultural economy in wartime. Are there appropriate price relationships for different kinds of land, as well as for agricultural products, which help to put land resources to their best wartime uses? Or is the only significance of changes in the relative prices of different kinds of land the fact that they mislead some farmers into incurring heavy debt burdens and warp the farm ownership pattern? If land prices are unique in the price system, perhaps some discussion of this point would have been in order. On the other hand, if the land market performs useful functions in wartime, it would be desirable to

show in what ways this influences the kinds of controls to be used or the standards to be employed in applying the particular controls recommended in the study.

It should be recognized, of course, that the authors of these three publications were not writing primarily for their professional colleagues. Each of the publications is somewhat in the nature of a brief for specific public policies; and some of the force of the arguments might have been lost if they had attempted to take the reader too far into the broader implications of the particular policies for other parts of the war economy. Perhaps the authors considered these interrelations of too little importance to warrant consideration in this type of publication. Yet some consideration of such matters as the interrelations between price policy for individual products and the aggregate flow of money income, between inflation control measures and income incentives to increase and redirect production, and between land market controls and the most effective utilization of land and other agricultural resources, might have helped to orient specific problems better in the larger totality of wartime economic policy.

These remarks are not intended to question the service that publications of this kind perform. It is refreshing, indeed, to have these problems discussed in such a forthright manner. Other students may come out with different answers, but it is out of the process of intelligent discussion and debate that the real issues are developed and clarified.

DONALD C. HORTON

*Bureau of Agricultural Economics*

*The Reciprocal Trade Agreements Program*, James Constantine Pearson, Washington, D. C., Catholic University of America Press, 1942. 328 pp. $2.00.

This work is much more than a sympathetic appraisal of American foreign policy under the Trade Agreements Act. It is a careful examination of the development of trade as an instrument of international relations, and of the general philosophy of international trade, of which the American trade agreements program is presented as the most recent phase.

In his first chapter, Dr. Pearson outlines the early evolution of international trade policy, giving the reader an introduction to the

broad concepts of mercantilism, free trade and protectionism from which the policies of modern trading nations have emerged.

The second chapter offers a detailed description of the development of trade policy from 1918 to the early 1930's. In dealing with the fundamental changes in world economic structure caused by the war of 1914–1918, Dr. Pearson builds a convincing argument in support of such a trading policy as that represented by the trade agreements program. The economic maladjustments embodied in the peace treaties are shown as major hindrances to trade. The attempt to combine the policy of self-determination among European nationalist groups with that of economic self-sufficiency is an outstanding example of how little consideration was given the producing and trading potential of a great consuming population. These deliberate additions to the number of customs units contributed substantially to the economic instability of Europe and of the countries whose goods formerly found an outlet in European markets.

In his discussion of the efforts of various trading nations to overcome some of the handicaps to commercial intercourse, the author gives considerable attention to the position of the "most-favored-nation" principle, a basic feature of the agreements made under the Trade Agreements Act, and a new departure in the commercial policy system built up after the last war. While Dr. Pearson rightly finds no satisfactory alternative to a general application of the unconditional most-favored-nation principle, he might well have pointed out that under the modern complex system of trade barriers, including many elements other than import duties, application of this laudable principle does not in fact assure equalization of competitive opportunity. Import quotas are a good example of this development. Equality of customs treatment may be assured, but a fixed import quota definitely limits competitive opportunity. The practice has developed in recent years, and under the trade agreements program, of allocating import quotas in terms of the proportion of the trade enjoyed in a so-called representative period of earlier years. This practice takes no account of possible changes in competitive relationships, and tends to freeze trade in the established pattern, despite any acceptance of the most-favored-nation principle with respect to import duties.

In his comments on the causes of the depression of the 1930's, Dr. Pearson enters a highly controversial field which is of special

significance in the present instance since it is the one in which the trade agreements program was born. It is not hard to argue with Dr. Pearson in this field; perhaps the most helpful position to take is that (a) the post-1918 period was one of serious economic maladjustment, and (b) the trade agreements program was the outstanding effort in the international field to counteract that maladjustment.

The position of agriculture in the depression years is a fundamental consideration to which Dr. Pearson gives due observance. Relatively large surpluses in exporting countries coincided with efforts of importing countries to protect farmers from the effects of general decline in price levels. The relative severity of the depression in its effects upon industrial and agricultural exporting countries may still be a matter of debate, particularly as far as the trade relations of the U. S. with Europe are concerned. Also the Trade Agreements Act did not state specifically that the measure was designed to restore agricultural exports to something like their earlier volume. The general pattern of U. S. trade, however, suggests that if the declared objective (enlarged trade) was to be reached, it must be largely by increasing agricultural exports and increasing industrial imports. This does not minimize the importance to the U. S. economy of industrial exports. It is significant however, that the statements used by Dr. Pearson to point up the U. S. losses in export trade emphasize the agricultural items.

This reviewer finds that the section on the mechanics of making an agreement checks closely with his experience as the agricultural representative on numerous "country committees." Dr. Pearson has omitted no important elements from his material on the procedure followed by the interdepartmental organization handling the work of the program. His comments regarding functions and responsibility indicate a remarkably painstaking effort to get behind the scenes for a good view of the wheels in motion.

On the point of whether or not departmental personnel can function effectively as members of Trade Agreement Committees, however, it may be worth noting that such assignments usually are given a high priority in the officer's work schedule. Furthermore, there seems little ground to assume that trade agreement work is of necessity incompatible with the committee members' departmental responsibilities. If a conflict did develop, then it could

be assumed that the policy of the officers' department was not in line with the trade agreements program. Such a situation did in fact arise when officers of the short-lived Office of the Special Adviser to the President on Foreign Trade, under Mr. George N. Peek, were members of trade agreement interdepartmental committees. There is no indication, however, that officers of other agencies had any trouble, at least in the pre-war years, in reconciling their trade agreement work with their departmental duties.

Pearson is well-advised in his analysis of the effectiveness of the program to raise questions regarding the finality of any statement that a particular measure is "economically right." In the foreign trade field it is commonplace to hear a protectionist policy praised as economically desirable by the interests receiving protection. On the other hand, those same interests would regard it as economically unsound to impose high duties upon an imported item necessary to the conduct of their business.

The "full and stable prosperity" envisaged in the trade agreements program is found by Pearson, and validly so, to be a function of the increased national income expected to result from freer international trade. He rejects any suggestion of doubt regarding the ultimate desirability of result, and builds a carefully argued case to show the program did in fact make a contribution to the national welfare through stimulating total national income. And this, it should be noted, is seen to have resulted even though the stimulation of imports was, within the limitations of the Act, given as much weight as the increasing of exports.

Without permitting himself to be identified as an out-and-out free trader, Pearson takes the line that a sufficient amount of common virtue exists in free trade and the trade agreements program to make the ends sought in the latter highly desirable, for national and international economic and political reasons. This position is reflected against the observation that " 'protectionism' as a post-war trade policy . . . constituted a cardinal factor in the collapse of world trade" (p. 231–232). He finds also that all systems identified with autarchy invariably undermine world trade and fail in the end to foster maximization of the national income. He points out the presence of the current war as a failure of autarchy to produce the security it promised, but this reviewer feels that an opportunity was missed for stressing vigorously the fatal consequences of the

struggle for self-sufficiency to support military power. Surely no more convincing example of the futility of such a policy can be found than the recent collapse of Italian Fascism.

Pearson's discussion of the reasons why the U. S. should not try to live within itself includes some of the points in the work of special interest to the agricultural economist. Disposal of agricultural "surpluses" abroad is noted as a prominent factor in maintaining a wholesome home market for domestically manufactured goods. The argument here follows closely the line of thought expressed in Henry A. Wallace's "America Must Choose"—between a contracting agricultural economy and a willingness to use imported products to the degree necessary to maintain and expand our peace-time agricultural enterprise.

The treatise makes clear the author's conviction that the trade policy of the U. S. should be so designed as to encourage the full scope of private enterprise, under a minimum of federal control and direction. By showing how bilateralism of necessity entails close official regulations, the multilateral basis of the trade agreements program is made to appear to its greatest advantage. This thesis certainly fits the realities of trade practice in the period between the wars. The foreign trade picture of the coming post-war period is not predictable, but perhaps we should be prepared to adjust to a degree of control lying somewhere between the two extremes of our recent experience.

In his detailed appraisal of the effectiveness of the trade agreements program, Pearson takes the very liberal position that "its aim is neither to increase American exports as much or more than imports—a mercantilist objective—nor to outwit the foreign countries in the exchange of concessions." With respect to the encouraging of imports, it is worth nothing that in many instances, the inability to reduce U. S. duties by more than 50 percent prevented the encouraging of imports to the extent that the negotiators felt was justified. This fact made it difficult to secure a full measure of substantial concessions from the foreign negotiators and, in the reviewer's opinion, interfered seriously with attaining the general objectives of the program.

The author quite rightly observes that any appraisal of effectiveness of concessions is seriously hampered by the influence of factors affecting trade other than the concessions granted and received. Since most of the agreements became effective in a period of recov-

ery, it may be argued that the foreign trade of the U. S. would have expanded in the absence of a trade agreements program. Pearson, however, points out that in most cases, the *rate* of recovery of trade with agreement countries was greater than in trade with non-agreement countries, and that the *rate* of expansion tended to be greater in concession items than in non-concession items.

An outstanding feature of Dr. Pearson's analysis is his very commendable sense of balance with respect to the influence of the agreements program as an instrument of economic policy. He makes no effort to conceal his enthusiasm for the program and for the trade policy implemented thereby, but the following paragraph appearing in the concluding section of the work sums up his attitude toward his subject:

"In the province of practical accomplishments the results obtained thus far tend to justify the program. There have been no spectacular, cheer-arousing achievements. No fundamental reconstruction or recovery has resulted therefrom, nor is it possible for it or any kind of foreign trade program to effect a complete 'solution' of the problem of agriculture or unemployment or full industrial revival. The reciprocal trade policy is only one of the many contributory factors and its influence may be enhanced or neutralized by other forces. Nevertheless, there have been small but clearly discernible positive results ensuing from the trade agreements program. The value of these lies in the fact that they are in the right direction rather than in their importance" (p. 299).

JOHN L. STEWART

*Office of Agricultural Relations*

# NEWS ITEMS

The University of Chicago announced the appointment of Theodore W. Schultz as Professor of Agricultural Economics effective October 1, 1943. In making this announcement, President Robert M. Hutchins indicated that the University of Chicago will undertake the development of a graduate center and a program of research in the economics of agriculture and of food. Professor Schultz leaves Iowa State College, where he has been Chairman of the Department of Economics and Sociology and head of the Rural Social Science Section of the Agricultural Experiment Station. The University of Chicago for some years has been developing plans for research and graduate work in agricultural economics. Dr. Henry C. Taylor took the initiative in establishing the Farm Foundation Fellowships at the University. Drs. E. C. Young of Purdue University, W. E. Grimes of Kansas State College and R. R. Renne of Montana State College served as guest professors in facilitating this development. For the past several years an active "Seminar" on agricultural economic problems under the leadership of Professor Simeon E. Leland, Chairman of the Department of Economics, Dr. H. C. Taylor and Vice President Emery T. Filby, has drawn upon agricultural leaders, government experts and scholars in focusing and shaping these plans. While undertaking the new teaching and research program for the University, Professor Schultz will continue to serve the United Nations Interim Commission on Food and Agriculture as economist, and also as advisor and consultant to the State Department, Lend Lease, Federal Reserve Board, and the United States Department of Agriculture.

Norris J. Anderson has resigned his position at South Dakota State College to accept appointment as Associate Professor of Agricultural Economics, Kansas State College.

Samuel W. Atkins, recently with the Soil Conservation Service, has joined the staff of the Bureau of Agricultural Economics as Agricultural Economist, and has been assigned to the Appalachian Regional Office, with headquarters at Knoxville, Tennessee.

Murray R. Benedict, Professor of Agricultural Economics and Agricultural Economist in the Experiment Station and on the Giannini Foundation of the University of California has been granted leave of absence from the University to accept a position as advisor with the Lend-Lease Administration. He is in Washington, D. C.

C. O. Brannen became Director of the Agricultural Experiment Station at the University of Arkansas on July 1, after having served as Assistant Director for a number of years. In addition, effective on the same date, Dr. Brannen became Director of the University Bureau of Research. The function of the Bureau of Research and the Director is to coordinate research projects and programs throughout the University and its branches.

Alfred A. Brown, Assistant Professor at Massachusetts State College has accepted a temporary assignment in the Marketing and Transportation Section in the Bureau of Agricultural Economics. He will serve as consultant in the organization of a project on transportation costs.

H. S. Cannell, recently transferred from the Public Roads Administration to the Division of Marketing and Transportation Research, Bureau of Agricultural Economics, Washington, D. C.

R. H. Chinn has accepted an extension position in Farm Management at Purdue University. Mr. Chinn replaces S. O. Kessler, who resigned in order to manage a central Indiana livestock farm.

T. L. Cleary, formerly Associate Economist, Economics Section, Extension Service, Washington, D. C., is now Acting Chief of Market Activities Section, War Food Administration, New York City.

T. K. Cowden resigned his position as Associate Professor of Agricultural Economics at Purdue University on September 15 to become Chief Economist and Director of Research with the American Farm Bureau Federation in Chicago. Dr. Cowden had been in charge of Agricultural Marketing work at Purdue University.

Carl C. Curtiss, formerly with the Office of Strategic Services, is now on the staff of the Division of Marketing and Transportation Research.

H. M. Dixon, formerly In Charge, Economics Section, Extension Service, Washington, D. C., is now Assistant Deputy Director of the Emergency Farm Labor Program, Washington, D. C.

D. C. Dvoracek, formerly Assistant Professor of Agricultural Economics, and Extension Marketing Specialist in Minnesota, is now Senior Extension Economist (livestock and grain), Economics Section, Extension Service, Washington, D. C.

Pavel P. Egoroff, Acting Assistant Economist, Food Research Institute, Stanford University, has returned after several months' work in the Office of Strategic Services, Washington, D. C.

Abram W. Epp, who has been Assistant Professor of Economics at Colorado State College for the past three years has accepted a similar position at the University of Nebraska.

Norman Leon Gold, who has been named as Acting in Charge of the Civilian Food Requirements Branch of Food Distribution Administration, has been in the service of the Department of Agriculture since 1934. He has been connected successively with the Bureau of Agricultural Economics; Fruit and Vegetable Division of the Agricultural Adjustment Administration; as Chief of Economic Analysis Section of Federal Surplus Commodities Corporation, and Assistant Chief, Distribution Division of Surplus Marketing Administration. Since 1942 he has been a member of the staff of the Director of Food Distribution Administration.

Gideon Hadary, graduate student in Agricultural Economics at Wisconsin, accepted an appointment as Agricultural Economist in the program Analysis and Appraisal Division of the War Food Administration in Chicago.

Charles M. Hardin, who is associated with Dr. John D. Black of Harvard University in a seminar on agricultural policy in the Littauer School of Public Administration, spent the summer under the grant of a traveling fellowship from Harvard University in studying the problem of federal-states relations in agriculture. He did field work in about twenty states.

Robert G. Hepburn, former County Agent in New Haven County, Conn., has been appointed Extension Economist in the Department of Agricultural Economics at the University of Connecticut.

A. C. Hoffman, former Director of the Food Price Division and Acting Deputy Administrator for Food Price of the Office of Price Administration, joined the staff of the Food Distribution Administration in June. He has been placed in charge of the newly established Price Branch. Before joining the Office of Price Administration staff in May 1941, he had served for seven years as an economist in the Agricultural Adjustment Association and the Bureau of Agricultural Economics in the Department of Agriculture.

Raymond W. Hoecker of the Department of Economics and Sociology of Kansas State College has joined the staff of the Division of Marketing and Transportation Research, Bureau of Agricultural Economics, at Washington, D. C., as Agricultural Economist.

Donald B. Ibach, Senior Agricultural Economist, has transferred from Soil Conservation Service to the Bureau of Agricultural Economics, where he will work on Interregional Competition in the Division of Farm Management and Costs at Washington, D. C.

Everett Jennewein, joined the staff at South Dakota State College as Assistant Professor in Marketing Research.

R. W. Jones, Associate Social Science Analyst from the Little Rock office of the Bureau of Agricultural Economics, has been assigned temporarily to College Station, Texas, for duties in cooperation with the Texas Agricultural Experiment Station and the Extension Service.

Edmond J. LeBrun, formerly Assistant Economist, Poultry and Egg Division, Office Price Administration, Washington, has been appointed research instructor in Agricultural Economics at Rhode Island State College and began his duties August 1.

Wilfred Malenbaum, formerly Instructor in Agricultural Economics at Harvard University is now working with the Office of Strategic Services on problems of food supply of enemy and allied nations. His doctor's thesis on problems in wheat supply has been awarded the Wells Prize at Harvard University.

Kenneth C. Miller, has accepted an extension position at Purdue University. Mr. Miller replaces Dr. P. A. Henderson who resigned in order to manage a large Nebraska farm. Mr. Miller was formerly in Farm Management work with an insurance company.

Donald Mitchell, Agricultural Economics Department of Wisconsin, is now devoting full time to farm management aspects of the federal soil erosion control project at Coon Valley, Wisconsin.

W. G. Murray has been appointed Acting Head of the Department of Economics and Sociology at Iowa State College to succeed T. W. Schultz.

E. A. Myer, who came with the Food Distribution Administration with the transfer of the food work from the War Production Board in December, 1942, has been named Chief of the Processors Branch. Mr. Myer was engaged in all phases of the food processing business for more than 20 years before he came to the Government service in 1941.

James L. Paschal has resigned his position as Senior Agricultural Economist in the Bureau of Agricultural Economics at Denver, Colorado, to accept the position of Associate Professor of Rural Economics at Colorado State College, Fort Collins, Colorado.

George L. Peterson, Agricultural Economist in the Division of Agricultural Finance, has transferred to the Requirements and Allocations Control Branch, Food Distribution Administration.

Weber H. Peterson, Assistant Agricultural Economist, is now working on Interregional Competition in the Division of Farm Management and Costs, Bureau of Agricultural Economics, at Washington, D. C.

A. Peter Ruderman, who recently received his Bachelor's degree at Harvard University and took some graduate work at Iowa State College, is now a member of the staff of the Division of Marketing and Transportation Research, Bureau of Agricultural Economics, Washington, D. C.

Leonard Salter, who spent the past year at the University of Minnesota taking graduate work, returned to the Department of Agricultural Economics at Wisconsin where he is specializing in Land Economics.

Marvin A. Schaars, of the Agricultural Economics Department at Wisconsin, has been acting as Chief of the Agricultural Classification Section at the State Headquarters of Selective Service in Wisconsin. He is continuing his instructional duties at the University.

Luke M. Schruben, formerly Assistant Professor of Agricultural Economics, Extension Service, Kansas State College, Manhattan, Kansas, is now Senior Extension Economist (North Central Region in charge of Farm Management), Economics Section, Extension Service, Washington, D. C.

Adolph Scolnick, who received his Bachelor's degree from George Washington University, recently joined the staff of the Division of Marketing and Transportation Research, Bureau of Agricultural Economics, Washington, D. C.

E. Fenton Shepard, Associate Agricultural Economist, joined the Division of Agricultural Finance in July 1943 to do research work in the field of farm mortgage credit.

Sylvester R. Smith has been appointed as Deputy Director of Food Distribution Administration. Mr. Smith succeeds J. S. Russell, who resigned to become Managing Editor of the Des Moines Tribune. Before his recent appointment as Deputy Director, Mr. Smith had been serving as Assistant Deputy Director for nearly six months. He had previously been Assistant Chief of the Fruit and Vegetable Branch for one year.

Abigail Stone, Research Assistant at Massachusetts State College has accepted a position in the Statistical Laboratory of Iowa State College.

W. B. Stout, formerly Senior Extension Economist (livestock and grain), Economics Section, Extension Service, Washington, D. C., is now In Charge, Economics Section, Extension Service, Washington, D. C.

V. P. Timoshenko, Economist, and Professor of Commodity Economics, Food Research Institute, Stanford University, is on leave of absence, acting as consultant to the Office of Strategic Services, Washington, D. C.

L. M. Vaughan, formerly Senior Extension Economist (Northeast Region in charge of Farm Management), Extension Service, Washington, D. C., is now In Charge, Labor Utilization Section, Emergency Farm Labor Program, Extension Service, Washington, D. C.

W. C. Waite's leave to serve with the Food Distribution Administration has expired and he has returned to his position as Professor of Agricultural Economics, University of Minnesota.

Russell M. Wilder has resigned as Chief of the Civilian Food Requirements Branch of the Food Distribution Administration to return to his work at the Mayo Clinic. Dr. Wilder, internationally recognized authority on nutrition, has been on leave of absence from the Clinic since last January. He will continue as medical advisor to the Food Distribution Administration and spend one-fourth of his time on this job in Washington.

Holbrook Working, Economist, and Professor of Prices and Statistics, Food Research Institute, Stanford University, is on leave of absence, acting as Chief Statistical Consultant in the Office of Production Research and Development, War Production Board, Washington, D. C.

Oscar Zaglits, Senior Agricultural Economist, who came to the Division of Agricultural Finance as Agricultural Economist in February 1940 to do research work in the field of agricultural credit, has transferred to Office

of Foreign Agricultural Relations to assume charge of the Finance and Cooperation Section of the Regional Investigations Branch.

Virgil B. Fielder, Assistant Professor of Agricultural Economics at the University of Idaho, has been employed as Assistant Professor in the Department of Rural Economics and Sociology at the University of Arkansas, effective August 1, 1943.

Roice H. Anderson has been appointed Assistant Professor in Agricultural Economics at the University of Wyoming.

## HONOR ROLL

Agricultural Economists in the Armed Services of the United States*

| | | |
|---|---|---|
| Baker, Richard | Ohio State University | Army |
| Baughman, Ernest | Nat'l. Council of Farmer Coop. | Navy |
| Carico, Hugh, Jr. | University of Minnesota | Army |
| Hathcock, J. S. | U. S. Civil Service Comm. | Army |
| Christenson, Raymond P. | Bur. Agr. Economics, USDA | Navy |
| Headington, Robert | Ohio State University | Army |
| Keith, Karl | Ohio State University | Navy |
| Mehr, Stanley | Bur. Agr. Economics, USDA | Army |
| Owens, Albert L. | Rhode Island State College | Army |
| Parsons, O. A. | Montana State College | Army |
| Sayre, Charles R. | Bur. Agr. Economics, USDA | Navy |
| Schmidt, Warren | Ohio State University | Navy |
| Schwartz, Donald | Ohio State University | Army |
| Thewlis, John | Ohio State University | Navy |
| Thompson, Ned O. | University of Arizona | Army |
| Tinley, James M. | University of California | Army |
| Toy, James D. | Farm Credit Administration | Army |

* Only Agricultural Economists reported to the Editor as having joined the armed services since the publication of the August 1943 issue of the JOURNAL are included in the list.

## 1943 VICTORY BOOK CAMPAIGN FOR MEN AND WOMEN IN ARMED SERVICES

We, as an organization, have pledged our support and active participation in the 1943 Victory Book Campaign. We need your help, your volunteer assistance and organizing capacity, both as an individual and as an organization member, to insure for ourselves a lion's share in the over-all contribution to the drive.

The second edition of the Victory Book Campaign is now in progress. Industrial, civic, educational, labor and community organizations are contributing this year, more than ever, by cooperating in the collection of books for men in our armed services.

Nowadays, a terrible strain has been placed on the American home as we know it. Husbands, fathers, sons, have forsaken their loved ones in defense of their country and its way of life. They are battling today on many fighting fronts. What symbol, indeed, can most vividly bring to mind the home with its intimacy, its warmth, its relaxed, easy-going freedom? Next to cherished family letters, surely, it is a good book, the precious friend that serves at a time of need, to entertain, refresh and stimulate.

The emphasis has been, and is today, on the very best books you can give. This means, first of all, the books must be in good physical condition, not the broken-down, dog-eared volumes accumulating dust and mould in the attic. The kinds of books wanted include current best sellers (Book of the Month, Literary Guild and similar selections) and the more recently published popular fiction and non-fiction; detective and mystery fiction; technical books published since 1935 in the fields of architecture, aeronautics, chemistry, drawing, meteorology, military science, navigation, photography, physics, radio, shop mechanics, philosophy, psychology, history, etc.; humorous books; pocket books and other small sized editions of popular titles.

When you rifle your bookshelves, pick out the books you especially value—and give them! See that your neighbor does the same thing. Remember, books are the life-blood of the soldier's spirit.

Book-giving to our men in the Armed Forces is, and always will be, a lofty expression of America's affection for "our own" in the camps, naval stations, the USO and Red Cross centers and at sea. Just as you want our soldiers and sailors to be physically fit, see that the books you draft for them are in sound condition.

In this huge, cooperative undertaking we want to do our share and do it well. Just take your books to the nearest Public Library and do it today!

# INDEX TO VOLUME XXV

## 1943

### SUBJECTS


A desirable wartime land policy, 166
A post mortem on county planning, 644
A reaction to land value control proposals, 822
A specific-risk scheme for wheat crop insurance, 759
Adaptation of crop insurance to tobacco, 410
Agricultural commodities in the post-war period, chronic surpluses of, 743
Agricultural goals for 1943, techniques for achieving, 84
Agricultural post-war planning, Canadian, 326
Agricultural price policy, January 1943, 1
Agricultural production goals, contributions of Farm Security Administration borrowers to, 101
Agricultural production in 1943, resources available for, 65
Agricultural production in the corn belt, farm labor situation and its effect on, 278
Agricultural production, the influence of managerial ability and size of farm on the efficiency of, 105
Agriculture, German, collective bargaining in, under the Weimar Republic, 458
Agriculture in an expansionist economy, 36
Agriculture of South Central Brazil, changes in the, 622
Agriculture when the war ends, 309
American Farm Economic Convention, 1943 program plans for the, i, (August issue)
Annual meeting, program of the thirty-third, 362
Annual reports, 351

Brazil, changes in the agriculture of South Central, 622
Britain's wartime food policy, 384
Business price policies, constitutional aspects of public regulation of, 560

Canada, farm labour situation in, 287
Canadian agricultural post-war planning, 326
Changes in the agriculture of South Central Brazil, 622
Chronic surpluses of agricultural commodities in the post-war period, 743
Collective bargaining in German agriculture under the Weimar republic, 458
Commercial dairy herds, diminishing returns in feeding, 397
Conservation of transportation, wartime problems of, 147
Constitutional aspects of public regulation of business price policies, 560
Contribution of farm management research to attainment of production goals, 110
Contributions of farm security administration borrowers to agricultural production goals, 101
Control, government, after the war, 807
Controlling hog prices during the transition from war to peace, 777
Corn belt, farm labor situation and its effect on agricultural production in the, 278
County planning, a post mortem on, 644
Crop insurance, adaptation of, to tobacco, 410
Crop yield index numbers, 583

Dairy herds, commercial, diminishing returns in feeding, 397
Diminishing returns in feeding commercial dairy herds, 397

Efficiency of agricultural production, the influence of managerial ability and size of farm on, 105
Efficiency of feeding livestock, the, 599
Essential food requirements in wartime, 835
Expansionist economy, agriculture in an, 36

Factor analysis, new light on, 477
Farmers and organized labor, 367
Farm income, what is a minimum adequate? 662
Farm labor adjustments after World War I, 269
Farm labor and food production, 301
Farm labor situation and its effect on agricultural production in the corn belt, 278

Farm labor situation in Iowa, 295
Farm labor situation, Ohio, 298
Farm labour situation in Canada, 287
Farm management research, contribution of, to attainment of production goals, 110
Farm output, maintaining, with a scarcity of production factors, 95
Farm price parity, industrial wage policies and, 52
Food production policies in wartime, 545
Farm products, the impact of war on marketing, 120
Farm Security Administration borrowers contributions of, to agricultural production goals, 101
Farm tenure under the strain of war, 235
Feeding livestock, the efficiency of, 599
Food administration experience with hogs, 1917–19, 444
Food policy Britain's wartime, 384
Food price control—policy and mechanics, 19
Food production, farm labor and, 301
Food requirements in wartime, essential, 835
Food waste in distribution and use, 848

German agriculture under the Weimar Republic, collective bargaining in, 458
Government control after the war, 807
Great Plains, irrigation development and area adjustment in the, 433

Hog prices, controlling, during the transition from war to peace, 777
Hogs, food administration experience with, 1917–19, 444
Honor roll, 544, 739, 913
How farmers are meeting the scarcity of labor, 305
Hypotheses in land tenure research, 860

Impact of war on marketing farm products, the, 120
Industrial wage policies and farm price parity, 52
Influence of managerial ability and size of farm on the efficiency of agricultural production, 105
Internal trade barriers for margerine, 793
Iowa, farm labor situation in, 295
Irrigation development and area adjustment in the Great Plains, 433

Labor, how farmers are meeting the scarcity of, 305
Land market developments and the war, 190
Land market regulations, 203
Land policy, a desirable wartime, 166
Land tenure in Mexico, 219
Land tenure research, hypotheses in, 860
Land tenure research project, organization and objectives of the regional, 245
Land utilization and policy in the northern plains, war developments in, 176
Land value control proposals, a reaction to, 822
Livestock the efficiency of feeding, 599

Maintaining farm output with a scarcity of production factors, 95
Managerial ability and size of farm, the influence of, on the efficiency of agricultural production 105
Margarine, internal trade barriers, for, 793

New light on factor analysis, 477
News items, 535, 734, 908
1943 book campaign, 914
North central regional land tenure committee, work and plans of the, 258

Ohio farm labor situation, 298
Organization and objectives of the regional land tenure research project, 245
Organized labor, farmers and, 367

Parity and progress, 419
Post mortem on county planning, a, 644
Post-war planning, Canadian agricultural, 326
Price control, food—policy and mechanics, 19
Price control programs, prices paid by farmers: Their use in administering wartime, 338
Price parity, farm, industrial wage policies and, 52
Price policy, agricultural, January 1943, 1
Prices paid by farmers: their use in administering wartime price control programs, 338
Production goals, contribution of farm management research to attainment of, 110
Program of the Thirty-third annual meeting, 362
Program plans, 1943, for the American Farm Economic Association, i, (August issue)

Progress, parity and, 419
Publications received, 510, 705, 890

Reaction to land value control proposals, a, 822
Regional land tenure committee, work and plans of the North Central, 258
Regional land tenure research project, organization and objectives of the, 245
Regulation of business price policies, constitutional aspects of public, 560
Research, land tenure, hypotheses in, 860
Resources available for agricultural production in 1943, 65

Scarcity of labor, how farmers are meeting the, 305
Scheme for wheat crop insurance, a specific-risk, 759
Specific-risk scheme for wheat crop insurance, a, 759
Surpluses, chronic, of agricultural commodities in the post-war period, 743

Techniques for achieving agricultural goals for 1943, 84
Thirty-third annual meeting, program of, 362
Tobacco, adaptation of crop insurance to, 410
Trade barriers, internal, for margarine, 793
Transportation, wartime problems of conservation of, 147

War developments in land utilization and policy in the northern plains, 176
War, farm tenure under the strain of, 235
War, government control after the, 807
War, impact of the, on marketing farm products, 120
War, land market developments and the, 190
Wartime, essential food requirements in, 835
Wartime food policy, Britain's, 384
Wartime, food production policies in, 545
Wartime land policy, a desirable, 166
Wartime price control programs, prices paid by farmers: their use in administering, 338
Wartime problems of conservation of transportation, 147
Waste, food, in distribution and use, 848
What is a minimum adequate farm income? 662
Wheat crop insurance, a specific-risk scheme for, 759
Work and plans of the North Central regional land tenure committee, 258
World War I, farm labor adjustments after, 269

## AUTHORS

(Articles are indicated by asterisk *)

Allen, R. H.
*See* Reviews, 512

Beck, P. G., and James C. Jensen
*Contributions of farm security administration borrowers to agricultural production goals, 101
Beers, Howard W.
*See* Reviews, 523
Benedict, M. R.
Discussion: Agriculture when the war ends, 322
Bennett, John B.
*A desirable wartime land policy, 166
Bennett, M. K.
*Essential food requirements in wartime, 835
Black, John D.
*Agricultural price policy, January 1943, 1
Discussion: Industrial wage policies and farm price parity, 64
Borg, Walter T.
*Food administration experience with hogs, 1917–19, 444
Brady, Robert A.
*Governmental control after the war, 807
Breimyer, H. F.
*The efficiency of feeding lifestock, 599
Brownlee, O. H.
*See* Notes, 495

Card, Dana G.
*See* Notes, 881
Carter, Robert M.
*See* Notes, 671
Case, H. C. M.
*Work and plans of the North Central

regional land tenure committee, 258
Christensen, Raymond P.
*See* Reviews, 730
Ciriacy-Wantrup, S. V.
*See* Notes, 869
Clarenbach, Fred A.
*See* Regan, M. M., 190
Clark, Carl M.
Discussion: The impact of war on marketing farm products, 142
Coke, J.
*Farm labour situation in Canada, 287
Conaway, O. B.
*See* Reviews, 894
Craig, G. H.
*War developments in land utilization and policy in the northern plains, 176
Curtiss, W. M.
*Farm labor and food production, 301

Denhardt, Edith T.
*See* White, Bennett S. Jr., 743
Ducoff, Louis J.
*See* Reviews, 728
Duncan, Otis Durant
*Hypotheses in land tenure research, 860

Eckstein, Alexander
*Collective bargaining in German agriculture under the Weimer Republic, 458
Edwards, Everett E.
*See* Reviews, 521
Elliott, F. F.
*Agriculture when the war ends, 309
Engene, S. A.
*New light on factor analysis, 477
*See* Reviews, 518

Fernandez, Ramon
*Land tenure in Mexico, 219
Fischer, Lloyd H.
*What is a minimum adequate farm income? 662
Forster, G. W.
*Contribution of farm management research to attainment of production goals, 110
Foulon, Luis A.
*See* Reviews, 899

Grimes, W. E.
*See* Reviews, 515
Gross, Neal C.
*A post mortem in county planning, 644

Hammar, C. H.
*A reaction to land value control proposals, 822
*Agriculture in an expansionist economy, 36
*See* Reviews, 714
Hammerberg, D. O.
*Wartime problems of conservation of transportation, 147
Hardin, Charles M.
*See* Notes, 677
Hardin, Clifford M.
Discussion: Wartime problems of conservation of transportation, 163
Hardin, L. S.
*See* Warren, S. J., 95
Haroldson, W. C.
*See* Notes, 701
Harrell, George D.
*Prices paid by farmers: their use in administering wartime price control programs, 338
Herrmann, Louis F.
*Diminishing returns in feeding commercial dairy herds, 397
Hirsch, H. G.
*Crop yield index numbers, 583
Hoffman, A. C.
*See* Segal, S. A., 19
Hoffsommer, Harold
*Organization and objectives of the regional land tenure research project, 245
Horton, Donald C.
*See* Reviews, 899
Howell, L. D.
*Internal trade barriers for margarine, 793
Hurlburt, V. L.
Discussion: War Developments in land utilization and policy in the northern plains, 187

Jensen, James C.
*See* Beck, P. G., 101
Jesness, O. B.
*See* Reviews, 712, 891
Johnson, Neil
*See* Johnson and Tetro, 65
Johnson, Sherman E.
*Food production policies in wartime, 545
Johnson, Sherman E., Robert C. Tetro and Neil W. Johnson
* Resources available for agricultural production in 1943, 65
Johnston, P. E.
*Farm labor situation and its effect on agricultural production in the corn belt, 278

Kaldor, Donald R.
*Farm labor situation in Iowa, 295
King, Joe J.
*See* Notes, 506
Kling, William
*Food waste in distribution and use, 848
*See* Notes, 683

Lattimer, J. E.
*Canadian agricultural post-war planning, 326

MacFarlane, David L.
*See* Reviews, 514
MacGregor, J. J.
*Britain's wartime food policy, 384
May, Clyde O.
*The influence of managerial ability and size of farm on the efficiency of agricultural production, 105
McIsaac, A. M.
*See* Reviews, 523
Miller, J. P.
*See* Reviews, 525
Morrison, F. L.
*Ohio farm labor situation, 298
Murray, William G.
*Land market regulations, 203

Nesius, Ernest J.
*How farmers are meeting the scarcity of labor, 305
Nicholls, W. H.
*Constitutional aspects of public regulation of business price policies, 560
Norton, L. J.
Discussion: Techniques for achieving agricultural goals for 1943, 92

Pearlberg, Donald
*Parity and progress, 419
Parsons, Kenneth H.
*Farmers and organized labor, 367
Paschal, J. L., and P. L. Slagsvold
*Irrigation development and area adjustment in the Great Plains, 433
Patton, H. S.
Discussion: Canadian agricultural post-war planning, 335
*See* Reviews, 706
Peterson, Arthur G.
*See* Reviews, 520, 895

Reed, J. Joe
*Techniques for achieving agricultural goals for 1943, 84
Regan, M. M., and Fred A. Clarenbach
*Land market developments and the war, 190
Reynolds, Lloyd G.
*Industrial wage policies and farm price parity, 52

Sanderson, Fred H.
*A specific-risk scheme for wheat crop insurance, 759
Schickele, Rainer
*Farm tenure under the strain of war, 235
Schwartz, Harry
*Farm labor adjustments after World War I, 269
Schwartz, Harry
*See* Notes, 691
Schwenger, Robert B.
*See* Reviews, 892
Segal, S. A., and A. C. Hoffman
*Food price control—policy and mechanics, 19
Shepherd, Geoffrey
*Controlling hog prices during the transition from war to peace, 777
Discussion: Agricultural price policy January 1943, 14
Discussion: Food price control—policy and mechanics, 33
*See* Reviews, 532
Slagsvold, P. L.
*See* Paschal, J. L., 433
Stewart, John L.
*See* Reviews 902
Stigler, George F.
*See* Reviews, 528, 716
Stokdyk, E. A.
*See* Notes, 504
*See* Reviews, 723

Tetro, Robert C.
*See* Johnson and Johnson, 65
Thomsen, F. L.
*The impact of war on marketing farm products, 120

Vandenbosch, Amry
*See* Reviews, 533
Waite, Warren C.
*See* Reviews, 517, 713

Walsh, Robert M.
*See* Notes, 487
*See* Reviews, 718
Warren, S. W., and L. S. Hardin
*Maintaining farm output with a scarcity of production factors, 95

Weitzell, E. C.
*See* Reviews, 721
Wells, O. V.
*See* Reviews, 726
White, Bennett S., Jr., and Edith T. Denhardt
*Chronic surpluses of agricultural commodities in the post-war period, 743
Wilcox, Walter W.
*See* Reviews, 710
Witt, Lawrence W.
*Changes in the agriculture of South Central Brazil, 622
Working, Elmer J.
*See* Notes, 874
Working, Holbrook
Discussion: Agricultural price policy, January 1943, 16
Wrather, S. E.
*Adaptation of crop insurance to tobacco, 410

## NOTES

A discussion of "Food production policies in wartime" by Sherman E. Johnson, 869
A nutritional guide to wartime use of agricultural resources, 683
Agricultural resources, a nutritional guide to wartime use of, 683
Are state margarine taxes constitutionally vulnerable? 677
Chores on dairy farms, job analysis of, 671
Comments on Hirsch's views of crop index numbers, 874
Comments on regional dependency, 701
Comments on "Trends in agricultural cooperation," 506
Correlation analyses, methods of presenting, 881
Crop index numbers, comments on Hirsch's views of, 874
Dairy farms, job analysis of chores on, 671
Export market and price of lard, 487
Farm labor policy, 1942–1943, 691
"Food production policies in wartime" by Sherman E. Johnson, a discussion of, 869
Forward prices, some considerations on, 495
Hirsch's views of crop index numbers, comments on, 874
Job analysis of chores on dairy farms, 671
Lard export market and price of, 487
Methods of presenting correlation analyses, 881
Price of lard, export market and, 487
Regional dependency, comments on, 701
Some considerations on forward prices, 495
State proration, Supreme Court upholds, 504
Supreme Court upholds state proration, 504
"Trends in agricultural cooperation," comments on, 506

## BOOK REVIEWS

(Reviewer's name in parentheses)

Adams, George P., Jr.: *Wartime price control* (Arthur G. Peterson), 520

Barger, Harold: *Outlay and income in U. S. 1921–1938* (George Stigler) 716
Barger Harold and Landsberg, Hans H.: *American agriculture, 1899–1939: a study of output, employment and productivity* (Walter W. Wilcox), 710
Berry, Thomas Senior: *Western prices before 1861* (Arthur G. Peterson), 895
Boeke, J. H.: *The structure of Netherlands Indian economy* (Amry Vandenbosch), 533
Bowman, Mary Jean, and Hart, Albert Gailord: *Food management and inflation, Wartime farm and food policy series, pamphlet 8, 899*
Bunce, Arthur C.: *Economics of soil conservation* (R. H. Allen), 512

Davis, Joseph S.: *New international wheat agreements* (H. S. Patton), 706
Denhardt, E. T.: *Food control in Great Britain* (Warren C. Waite), 517

*Food in Wartime* (Raymond P. Christensen), 730

Garcia Mata, Rafael, and Franchelli, Romulo A.: *Cosecha Mecanica del Algodon* (*Mechanical harvesting of cotton*) (Luis A. Foulon), 899

Gleason, Miguel Alvarez: *Maquinara agricola (agricultural machinery)*, (Luis A. Foulon), 897

Harris, Seymour E.: *Postwar economic problems* (Robert B. Schwenger), 892
Hayden, Sherman Strong: *International protection of wildlife* (Conrad H. Hammar), 714
Hopkins, John A.: *Farm records* (S. A. Engene), 518
Hulbert, L. S.: *Legal phases of cooperative associations* (E. A. Stokdyk), 723
Hunt, Robert L.: *Farm management in the south* (W. E. Grimes), 515

Jensen, Einar, *et al.*: *Input-output relationships in milk production* (David L. MacFarlane), 514

Kuznets, Simon: *National income and its composition: 1919–1938* (George F. Stigler), 528

Martin, Edgar W.: *The standard of living in 1860: American consumption levels on the eve of the Civil War* (Howard W. Beers), 523
McCune, Wesley: *The farm bloc* (O. B. Conaway), 894
Murray, William G., *Land boom controls, Wartime farm and food policy series, pamphlet 9* (Donald C. Horton), 899

Perason, James Constantine: *The reciprocal trade agreements program* (John L. Stewart), 902

Reid, Margaret G.: *Food for people* (Warren C. Waite), 713
Robbins, Roy M.: *Our landed heritage: the public domain, 1778–1936* (Everett E. Edwards), 521

Salter, L. A., Jr.: *Land tenure in process* (E. C. Weitzell), 721
Schultz, Theodore W.: *Redirecting farm policy* (Donald C. Horton), 899
Shickele, Rainer: *Manpower in agriculture* (Louis J. Ducoff), 728
Spengler, Joseph J.: *French predecessors of Malthus: a study in eighteenth-century wage and population theory* (J. P. Miller), 525
Spiegel, William H.: *The economics of total war* (A. M. McIsaac), 523
Steiner, George A., and associates: *Economic problems of war* (A. M. McIsaac), 523
Stigler, George J.: *The theory of competitive price* (Geoffrey Shepherd), 532

Taylor, Henry C., and Taylor, Anne Dewees: *World trade in agricultural products* (O. B. Jesness), 891
Tolley, Howard R.: *Farmer citizen at war* (O. B. Jesness), 712
Tomasevich, Jozo: *International agreements on conservation of marine resources* (Robert M. Walsh), 718
Tosello, A.: *A technica de beneficiamento do algodão (The technique of processing cotton)*, (Luis A. Foulon), 897

*Wartime Farm and Food Policy* (O. V. Wells, 726

# JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION

SEPTEMBER, 1943 $1.50 PER COPY $6.00 PER ANNUM Vol. 38 No. 222

Observations on the Cost of Living Index of the Bureau of Labor Statistics .... LAZARE TEPER

Notes on Mr. Teper's Observations ... ARYNESS JOY WICKENS AND FAITH M. WILLIAMS

Analysis of Variance for Percentages Based on Unequal Numbers .... W. G. COCHRAN

"Retro" Charts ..... KARL KARSTEN AND EDITH BROOKS

A Mechanical Determination of Correlation Coefficients and Standard Deviations ..... JOHN R. PLATT

The Evidence for Periodicity in Short Time Series ..... TRUMAN L. KELLEY

Correlation Concepts and the Doolittle Method ..... DUDLEY J. COWDEN

Overestimation of Mean Squares by the Method of Expected Numbers .. R. E. COMSTOCK

Utility of Statistical Method in Aerodynamics ..... HERBERT G. SMITH

On Measures of Disperson for a Finite Distribution ..... ALBERT O. HIRSCHMAN

On Some Census Aids to Sampling .. MORRIS H. HANSEN AND W. EDWARDS DEMING

The Social Insurance Movement ..... R. CLYDE WHITE

**American Statistical Association**
**1603 K Street N.W., Washington 6, D.C.**

# THE ECONOMIC RECORD

***The Journal of the Economic Society of Australia and New Zealand***

Editor-in-Chief: D. B. COPLAND

**Single Copies 5/—(Australian)** **Annual Subscription 10/—(Australian)**

The *Economic Record* publishes authoritative articles by recognized economists on economic, financial, labour and social conditions in Australia and New Zealand.

*It is the only Journal* in Australia which examines these questions from a scientific point of view.

A list of the most important contributions to the last number will indicate the value of the Journal to Students of Australian and New Zealand affairs.

**June 1943:**

| | |
|---|---|
| Australian Income Tax, 1943 | H. S. Carslaw |
| Industrial Relations and Economic Theory | A. E. C. Hare |
| The Present versus the Future | J. S. G. Wilson |
| Price Stabilisation in New Zealand | H. L. Wise |
| The Australian Coal Industry, 1929-39 | A. G. L. Shaw |
| Delayed Action Deflation | W. T. Dowsett |
| The Pure Theory of Capital | W. Prest |
| Indebtedness of Marginal Wheat Farms in Western Australia | H. F. Goerke |
| The Western Australian Basic Wage 1926-42 | J. S. G. Wilson |

***Subscriptions should be sent to the publishers:***

**The Managing Director**
**THE MELBOURNE UNIVERSITY PRESS**
**Melbourne, N.3. Victoria. Australia.**

# THE REVIEW OF ECONOMIC STUDIES

Vol. X, No. 2 CONTENTS Summer, 1943

Swedish Economic Policy During the War .....*Karin Kock*
The Incidence of Rates on Houses .....*M. P. Fogarty*
The Theory of International Capital Movements and Its Verifications *J. Knapp*
The Geometrical Representation of Complementarity .....*F. A. Hayek*

The object of the *Review* is to supplement the facilities for the publication of new work on theoretical and applied economics, particularly by younger writers, and to promote discussion by means of short notes of a kind which do not normally appear in other journals. It is published three times a year in October, February and June.

Editorial communications, c/o Miss M. Bowley, The School of Economics, Dundee, Scotland; all other communications to The Secretary of the Review of Economic Studies, at New Court, Peterhouse, Cambridge.

**The Annual Subscription to the *Review* is 7s6d post free.**
**Single numbers 2s6d (2s9d post free)**

**Prices of early numbers on application.**

# THE SOUTH AFRICAN JOURNAL OF ECONOMICS

*EDITORS*

S. Herbert Frankel. Robert Leslie.

C. S. RICHARDS.

*CONTENTS OF VOL. 11, NO. 2*

*JUNE 1943.*

OLD AGE PENSIONS .....*By Professor H. R. Burrows and P. J. de Vos*
A CONTRIBUTION TO THE STUDY OF THE RELATIVE ROLES OF INCOME LEVELS AND PURCHASING HABITS IN THE DETERMINATION OF SUB-STANDARD FOOD CONSUMPTION .....*By Professor Edward Batson*
EUROPEAN INCOME DISTRIBUTION IN THE UNION OF SOUTH AFRICA AND THE EFFECT THEREON OF INCOME TAXATION .....*By Professor S. Herbert Frankel and H. Herzfeld*
REFORM IN PUBLISHED ACCOUNTS .....*By Herbert Greenwood*
PUBLIC WORKS AND EMPLOYMENT. A Note on Professor Hutt's Critique of the First Report of the Social and Economic Planning Council .....*By J. N. Reedman*
*REVIEWS:* Union Official Publications: Recent Periodicals and New Books.

Single Copies at 6s. per copy, obtainable from the Central News Agency, Limited, and all leading booksellers.

Overseas Agents for subscriptions £1.1.0. per annum, and single copies (6s. each) Messrs. P. S. King and Staples Ltd., Orchard House, 14, Great Smith Street, Westminster, London, S.W.1.

Subscriptions to the Journal, £1.1.0. per annum and enquiries re advertisement tariffs to the Chairman, Board of Management, P.O. Box 5316, Johannesburg.

# AMERICAN ECONOMIC REVIEW

*Contents*

Volume XXXIII September, 1943

External Economies and Diseconomies ..... H. S. Ellis and William Fellner
The Beveridge Report ..... Eveline M. Burns
The International Clearing Union ..... Imre de Vegh
Subsidies and Inflation ..... S. E. Harris
Moulton's *The New Philosophy of Public Debt* ..... D. McC. Wright
Monopolization and the Decline of Investment Opportunity .....
..... G. H. Hildebrand, Jr.

Communications, Reviews, Periodicals, and Notes

The AMERICAN ECONOMIC REVIEW, a quarterly, is the official publication of the American Economic Association and is sent to all members. The annual dues are $5.00. Address editorial communications to Dr. Paul T. Homan, editor, AMERICAN ECONOMIC REVIEW, c/o Brookings Institution, 722 Jackson Place, N.W., Washington, D.C. (temporary address); for information concerning other publications and activities of the Association, communicate with the Secretary-Treasurer, Dr. James Washington Bell, American Economic Association, Northwestern University, Evanston, Illinois. Send for information booklet.

## THE JOURNAL OF LAND & PUBLIC UTILITY ECONOMICS

**A quarterly founded in 1925 by Richard T. Ely**
**published by the University of Wisconsin**

***Current issue includes:***

Location of Industry . . . . . *Stephen Helburn*
Administration of Rural Zoning . . . . . *George S. Wehrwein*
Rebuilding American Cities after the War . . . . . *Homer Hoyt*
Wisconsin Experience with Central Assessment of Property Tax . . .
. . . . . *Harold M. Groves and A. Bristol Goodman*

ALSO

Department Articles *and* Book Reviews

Published in February, May, August, and November

*Subscription—$5.00 per year* *Single copies—$1.50*

**Editorial Offices**

**Sterling Hall, University of Wisconsin · Madison, Wisconsin**

# RURAL SOCIOLOGY

*Official Journal of the Rural Sociological Society*

*Managing Editor:* C. HORACE HAMILTON

North Carolina State College, Raleigh, North Carolina

VOLUME 8 SEPTEMBER, 1943 NUMBER 3

*Some of the Major Articles are:*

*Rural Problems and Village Welfare in the Middle East* .....Afif I. Tannous

*Social Participation Differences Among Tenure Classes in a Prosperous Commercialized Farming Area* .....C. Arnold Anderson and Bryce Ryan

*A Comparison of Three Measures of Socioeconomic Status* .....George A. Lundberg and Pearl Friedman

*Systems of Land Tenure in São Paulo* .....Carlos B. Schmidt

*Rural Panama: Its Needs and Prospects* .....Ofelia Hooper

*The Kolkhozes in the Economy of the Union of Socialist Soviet Republics* .....Germina Rabinowitch

RURAL SOCIOLOGY is published in March, June, September, and December. Membership dues in the Society, including subscription, are $3.00 per year; student membership, $2.00; subscription rates to non-members and libraries are $3.00 per year; single issue, 75¢.

Charles P. Loomis, U. S. Dept. of Agriculture .....Editor
Robert A. Polson, Cornell University .....Secretary-Treasurer

# THE JOURNAL OF POLITICAL ECONOMY

EDITED BY JACOB VINER and F. H. KNIGHT

*Department of Economics, The University of Chicago*

*The August, 1943, and later issues will contain:*

PUBLIC WORKS PROGRAM AFTER WORLD WAR I ....By *E. Jay Howenstine, Jr.*
ON THE INTERNATIONAL SPREAD OF BUSINESS CYCLES ..By *Oskar Morgenstern*
THE ROLE OF FOREIGN TRADE IN THE NAZI WAR ECONOMY .....
.....By *Arthur Schweitzer*
PROFESSOR ROBBINS' DEFINITION OF ECONOMICS .....By *Robert Scoon*
THE ECONOMICS OF COLLECTIVE WAGE BARGAINING: A CASE STUDY .....
.....By *Joseph Shister*

FOUNDED IN 1892. Published bi-monthly: February, April, June, August, October, December. Subscription $5.00 per year. Canadian postage, 24 cents; foreign postage, 60 cents. Single copies, $1.00

The University of Chicago Press · 5750 Ellis Ave., Chicago, Ill.

# AGRICULTURAL HISTORY

Designed as a medium for the publication of research and documents pertaining to the history of agriculture in all its phases and as a clearing house for information of interest and value to workers in the field. Materials on the history of agriculture in all countries are included and also material on institutions, organizations, and sciences which have been factors in agricultural development.

ISSUED QUARTERLY SINCE 1927

by

THE AGRICULTURAL HISTORY SOCIETY

Subscriptions, including membership: Regular, $3.00; student, $1.50; contributing, $10.00; life, $100 less age of applicant on last birthday.

Editor: Everett E. Edwards
Secretary-Treasurer: Arthur G. Peterson

Room 3901, South Building, 13th and C Streets SW
Washington, D.C.

## THE CANADIAN JOURNAL OF ECONOMICS AND POLITICAL SCIENCE

***The Quarterly Journal of the Canadian Political Science Association***

*Editors*

C. A. CURTIS, R. MacG. DAWSON, J. A. CORRY, G. A. ELLIOTT

*Managing Editor*

V. W. BLADEN, *University of Toronto, Canada*

| | |
|---|---|
| **Annual Subscription** | **$3.00** |
| **Single Copies** | **$1.00** |

This Journal publishes articles on the economic, political and social problems of Canada and on the general theoretical issues raised by these problems. The Journal also contains reviews, notes on current Dominion and Provincial Legislation, and on Canadian official publications. Each issue will contain a bibliography of Canadian Economics.

Subscriptions may be sent to the publisher

**THE UNIVERSITY OF TORONTO PRESS • Toronto, Canada**

"Thought-provoking . . . will undoubtedly help to shape our future thinking. . . . Anyone in the least interested in the position of the farmer in the post-war world should read it."—*Journal of the American Society of Agronomy.*

# EXPLORING TOMORROW'S AGRICULTURE

## COOPERATIVE GROUP FARMING

**A Practical Program of Rural Rehabilitation**

**By JOSEPH W. EATON**
**Director of Research**
***Rural Settlement Institute***

### SOME OF THE SUBJECTS DISCUSSED

Nature, methods and extent of cooperative farming practices in the U.S. and foreign countries.

An evaluation of some of the New Deal's "pilot" group farms.

Modern labor practices in agriculture; profit sharing.

Farms of the F.S.A.

Field factories without migratory workers: an answer to share-cropping.

Some problems of rational planning.

How farmers in general, and low-income farmers in particular, can get a secure and adequate income.

This is the first book to consider in a definitive and constructive way the conditions causing bankruptcy at an increasing rate among independent and low-income farmers, and to appraise the ability of government sponsored and other cooperative farming projects, both here and abroad, to solve the problem.

A challenging proposal for everyone concerned with the independent farmer's ability to survive in the post-war world.

242 pp. Cloth. $2.75

"I regard it as one of the best and probably the only book giving a comprehensive survey of cooperative group farming and its possibilities."—Dr. M. L. WILSON, *Director of Extension Work, U. S. Dept. of Agriculture.*

"Every realistically minded agricultural economist and sociologist should have a copy at hand until this book's arguments and case studies are weighed."—Prof. O. S. MORGAN, *Dept. of Agriculture.* Columbia University.

**HARPER & BROTHERS** : **49 East 33rd Street, New York 16**

U.S. AGR LIBRARY

DEC 9 1943

# JOURNAL *of* FARM ECONOMICS

## Contents

Chronic Surpluses of Agricultural Commodities in the Post-War Period..... *Bennett S. White, Jr.* and *Edith T. Denhardt* 743

A Specific-Risk Scheme for Wheat Crop Insurance..... *Fred H. Sanderson* 759

Controlling Hog Prices During the Transition From War to Peace..... *Geoffrey Shepherd* 777

Internal Trade Barriers for Margarine... *L. D. Howell* 793

Government Control After the War.. *Robert A. Brady* 807

A Reaction to Land Value Control Proposals..... *C. H. Hammar* 822

Essential Food Requirements in Wartime..... *M. K. Bennett* 835

Food Waste in Distribution and Use... *William Kling* 848

Hypotheses in Land Tenure Research..... *Otis Durant Duncan* 860

Published by

THE AMERICAN FARM ECONOMIC ASSOCIATION

Volume XXV NOVEMBER, 1943 Number 4

## Contents (*Continued*)


NOTES

A Discussion of "Food Production Policies in Wartime" by Sherman E. Johnson ..... *S. v. Ciriacy-Wantrup* 869
Comments on Hirsch's Views of Crop Index Numbers ..... *Elmer J. Working* 874
Methods of Presenting Correlation Analysis ..... *Dana G. Card* 881

PUBLICATIONS RECEIVED ..... 890

REVIEWS

Taylor, Henry C., and Taylor, Anne Dewees, World Trade in Agricultural Products ..... *O. B. Jesness* 891
Harris, Seymour E., Postwar Economic Problems ..... *Robert B. Schwenger* 892
McCune, Wesley, The Farm Bloc ..... *O. B. Conaway, Jr.* 894
Berry, Thomas Senior, Western Prices Before 1861 ..... *Arthur G. Peterson* 895
Garcia Mata, Rafael, and Franchelli, Rómulo A., Cosecha Mecánica del Algodon (Mechanical Harvesting of Cotton) ..... 897
Gleason, Miguel Alvarez, Maquinara Agrícola (Agricultural Machinery) . 897
Tosello, A., A Technica de Beneficiamento do Algodão (The Technique of Processing Cotton) ..... *Luis A. Foulon* 897
Schultz, Theodore W., Redirecting Farm Policy ..... 899
Bowman, Mary Jean, and Hart, Albert Gailord, Food Management and Inflation, Wartime Farm and Food Policy Series, Pamphlet 8 ..... 899
Murray, William G., Land Boom Controls, Wartime Farm and Food Policy Series, Pamphlet 9 ..... *Donald C. Horton* 899
Pearson, James Constantine, The Reciprocal Trade Agreements Program ..... *John L. Stewart* 902

NEWS ITEMS ..... 908

HONOR ROLL ..... 913

1943 BOOK CAMPAIGN ..... 914

INDEX TO VOLUME XXV ..... 915



*Price: $5 per year, this issue $1.25*

Entered as second class matter at the post office at Menasha, Wis. Acceptance for mailing at a special rate of postage provided for in the Act of February 28, 1925, authorized November 27, 1931.

*New!*

# Wartime Government In Operation

BY WILLIAM H. NICHOLLS

*Assistant Professor of Agricultural Economics, Iowa State College*

and JOHN A. VIEG

*Formerly Associate Professor of Government, Iowa State College*

SPONSORED BY THE AMERICAN COUNCIL ON PUBLIC AFFAIRS

THIS book is a constructive analytical study of our governmental wartime policies, with major emphasis on food program and labor policy. Combining historical narrative with economic and political analysis, the authors arrive at a sound diagnosis of the deficiencies in our governmental attitudes and machinery. The scholarly approach does not keep the authors from passing value judgments and from making practical policy recommendations.

The analysis which this book makes of the reciprocal effects of agricultural policy and labor policy is really the key to an understanding of our war mobilization and stabilization programs. The inter-relationships between manpower control, wage control, price control and the food production program are set forth with great clarity and the attitudes and strategies of organized labor, organized farm groups, the Congress and the Executive are discussed with frankness and discernment. Attention is centered on the shortcomings of legislation and administration as they reveal themselves in retrospect, not because the shortcomings have outweighed the successes, but because it is the shortcomings which suggest the defects and needed improvements in our governmental attitudes and machinery.

This book, a joint product of an agricultural economist and an expert in government, will be welcomed not only by students of economics and government but by everybody interested in politics. The intelligent voter will find it illuminating; the man actively engaged in shaping labor or farm policies will find it indispensable.

*Appendix, Tables, 2 Cartoons* $1.50 *October 1943*

Philadelphia 5, Pa.

THE BLAKISTON COMPANY

# THE AMERICAN FARM ECONOMIC ASSOCIATION

*President*
SHERMAN E. JOHNSON
Bureau of Agricultural Economics

*Vice-Presidents*
CONRAD H. HAMMAR
University of Missouri

HARRY R. WELLMAN
University of California

*Secretary-Treasurer*
ASHER HOBSON
University of Wisconsin

*Editor*
H. B. PRICE
University of Kentucky

*Assisted by*
DAVID L. MACFARLANE
Canadian Wartime Prices and Trade Boards

B. S. WHITE, JR.
U. S. Bureau of Agricultural Economics

*Editorial Council*
M. R. BENEDICT, University of California

J. F. BOOTH, Department of Agriculture, Canada

C. O. BRANNEN, University of Arkansas

F. F. HILL, Cornell University

S. E. JOHNSON, Bureau of Agricultural Economics

R. R. RENNE, Montana State College

G. S. SHEPHERD, Iowa State College

F. V. WAUGH, Bureau of Agricultural Economics

G. S. WEHRWEIN, University of Wisconsin

E. C. YOUNG, Purdue University



The JOURNAL OF FARM ECONOMICS is published quarterly, February, May, August and November by The American Farm Economic Association. Yearly subscription $5. Published at Menasha, Wisconsin.

*Editorial communications* including manuscripts submitted for publication, books for review or inquiries concerning the JOURNAL should be addressed to H. B. Price, Department of Markets and Rural Finance, University of Kentucky, Lexington, Kentucky.

*Applications for membership* or inquiries regarding the general affairs of the Association should be addressed to Asher Hobson, Department of Agricultural Economics, University of Wisconsin, Madison, Wisconsin.

GEORGE BANTA PUBLISHING COMPANY, MENASHA, WISCONSIN